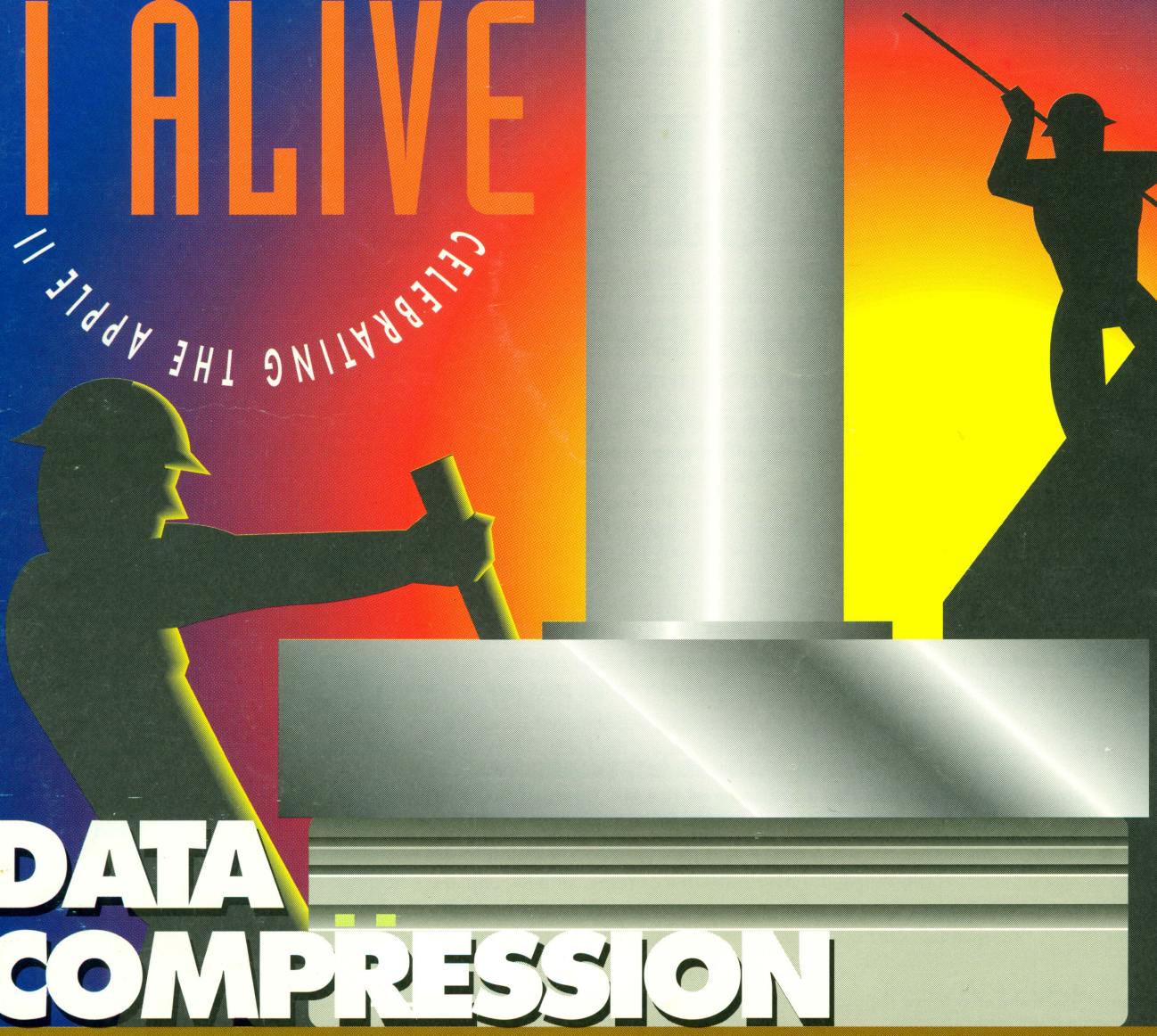
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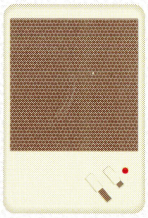
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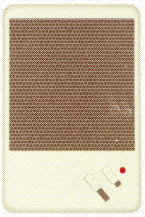
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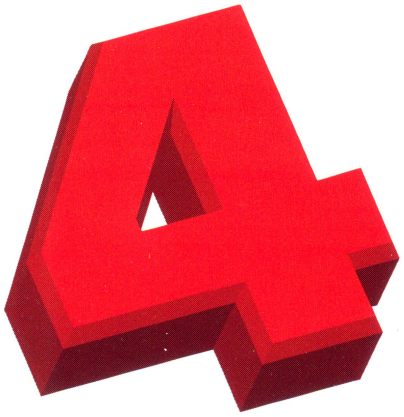
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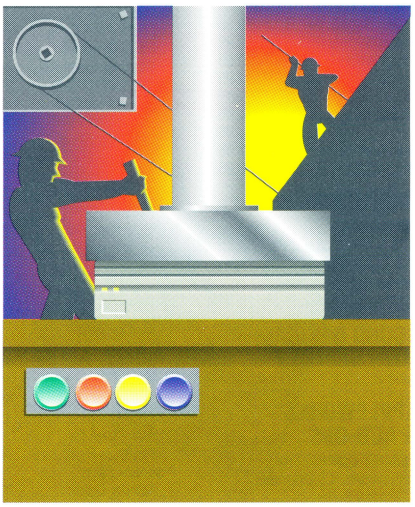
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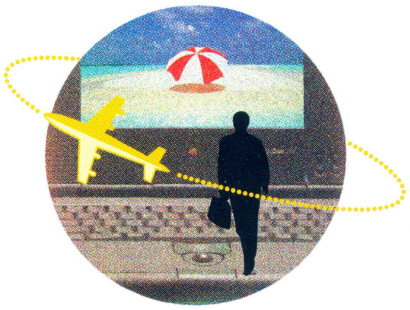
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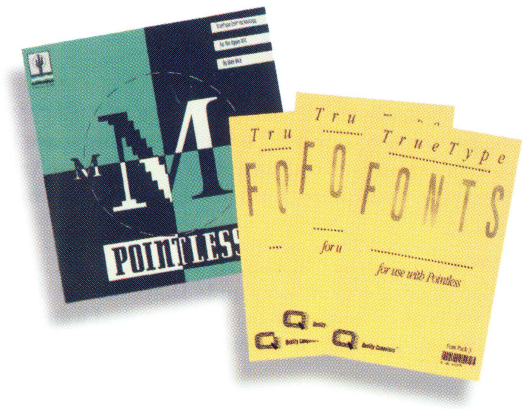
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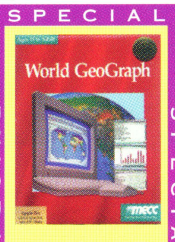
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# KANSAS CITY HEAT

JERRY KINDALL, EDITOR

**ON JULY 22 AND 23, THE FIFTH ANNUAL** A2-Central Summer Conference took place in Kansas City, Missouri. Affectionately known as KansasFest (after the popular AppleFests), the Conference drew attendees from all across the U.S. and Canada, and as far away as England, Australia, Germany, and Saudi Arabia.

Despite the similarity in name, KansasFest is definitely not an AppleFest-style trade show. There's no noisy exhibit hall crammed with vendors, no cash-waving customers standing in line to buy the latest wares. Instead, KansasFest is (at least during the day) a fairly quiet affair. People gather in conference rooms to learn about things they can do with their Apple IIs. In its early incarnations, KansasFest focused on programming techniques and was intended for developers, but these days there are sessions for everyone, and the 1993 KansasFest crowd was a well-rounded group of Apple II die-hards.

Session leaders this year included Joe Kohn (Shareware Solutions II) on maximizing shareware profits, Mike Westerfield (Byte Works) introducing a new 3D Logo programming environment and explaining the fundamentals of object-oriented programming, Randy Brandt (JEM Software) demonstrating *TheWorks 4.0*, Andy McFadden (author of WestCode's *HardPressed*) on data compression, and Roger Wagner on expanding *HyperStudio* with New Button Actions and Transitions. Mike Westerfield provided the keynote address ("Amateur Programming for Fun and Profit") and Bill Heineman (Interplay Productions) updated attendees on the Avatar project (see this month's Rumormonger).

One of the reasons things are so quiet during the day is that people are trying to recover from the previous night's partying. In fact, the registration forms for this year's conference had checkboxes not just for "Smoker/Nonsmoker" but for "Sleeper/Nonsleeper" to help the Resource Central staff match up appropriate roommates for the dorm rooms. Party activities included—I kid you not—"Bite the Bag," a game which required players to balance on one foot or one knee while picking up a paper bag with their teeth. After each round, the paper bag was shortened, requiring ever-better balance and coordination to stay in the game. Not coincidentally, these are exactly the facilities impaired by consumption of alcoholic beverages. Not to imply that any of the participants imbibed to excess—we'd never imply anything like that. Your editor watched the proceedings in frank amazement, wondering what aliens had taken over the brains of Roger Wagner, Randy Brandt, and the rest. (Roger Wagner was also spotted climbing the walls of the dorm. Evidently, the conference had him in a bit of a hyper mood.)

But the highlight of the festivities was unquestionably Thursday evening's roast of Tom "Uncle DOS" Weishaar, proprietor of Resource Central. GEnie's Dean Esmay, Script-Central's HangTime, Apple's Matt Deatherage, former A2-Central editor Dennis Doms, and the omni-present Roger Wagner ragged on Weishaar's hair, management style, and reputedly bad memory. *GS+* magazine's Steve Disbrow presided as Master of Ceremonies, and "Apple II Goddess" Tara Dillinger provided musical interludes in Weishaar's honor (including a hastily-prepared ditty, accompanied by Deatherage on piano, which proclaimed that the purpose of KansasFest was to make fun of "Tom's strange hair"). Weishaar, of course, got his chance to even things up at the end, and took the opportunity to fling a few pointed barbs back at his tormenters.

I haven't even mentioned the shaven heads of Matt Deatherage and his GEnie A2Pro crew. Or the story of how Lunatic (GEnie's A2 RoundTable marketing & promotions manager) chose his name. Or the computer lab buried deep in the tunnels under the Avila College campus. Or "The Deatherage Group," Friday's lunchtime spoof of PBS's McLaughlin Group. Or indoor Frisbee-tossing. Or the excessive trips to KC Masterpiece for barbecue. Or the heat. Or the humidity.

The best news is that, despite threats that this "could be the last" KansasFest in the conference's advertising, Weishaar grudgingly admitted that he might be willing to give it another try next year. Every Apple II enthusiast should attend at least one KansasFest in their life. If you haven't gone yet, next year should be your first—start making plans now for the biggest and best Apple II party. ■

# All Apple II

## No Compromise

### The Rumors

The Apple II is dead. The Apple II is outdated. The Apple II is not supported.

### The Facts

Hundreds of new software titles are published for the Apple II every year—from shareware to major commercial products. AppleWorks is the biggest selling, most widely used program of all time. More than 50% of computers used in American schools are Apple IIs. The Apple II can do everything that comparable computers can do. There is now a magazine dedicated to this marvelous machine.

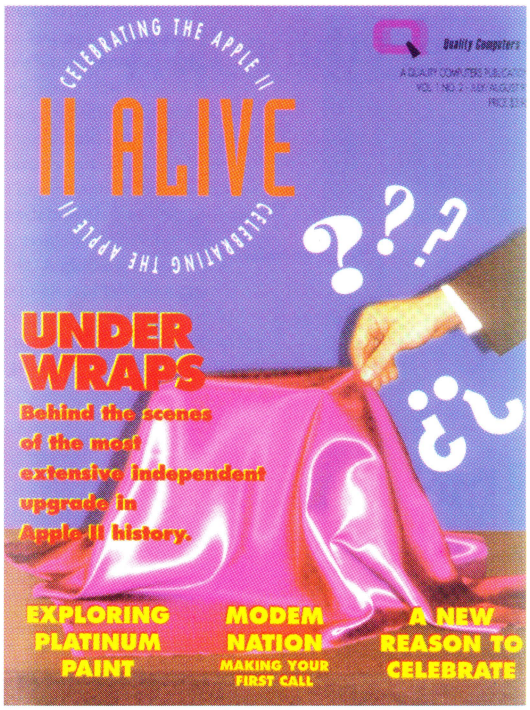
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II Alive covers the world of the Apple II. AppleWorks, Shareware, Technical Tips, Multimedia, System 6, Education, New Products, Desktop Publishing, Programming, Reviews, and more. It's all there. All Apple II. No compromise. It's the kind of support you'll only find in II Alive.

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# MORE POWER

## AppleWorks® 4.0

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### Bring AppleWorks into the '90's

In 1988, AppleWorks seemed to have reached its pinnacle with the release of version 3.0. But now you want more—the kind of upgrade that a program as great as AppleWorks deserves. That's why Quality Computers, and AppleWorks veterans Randy Brandt and Dan Verkade have developed ***AppleWorks 4.0***—the most powerful upgrade in AppleWorks history.

#### One Touch Computing

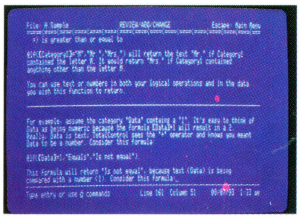
How would you like to automate AppleWorks? You can with ***AppleWorks 4.0***. That's because ***AppleWorks 4.0*** features dozens of built-in automatic functions that you can do with just a keypress. Imagine being able to set up and print an envelope automatically, or open a new data base with pre-formatted fields by pressing a key. There's lots of others just like it, and they're easy with ***AppleWorks 4.0!***

#### True Integration

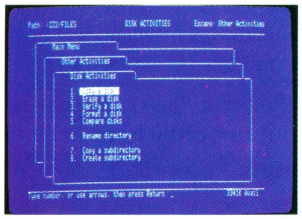
Integration, always AppleWorks' strong suit, becomes tighter than ever with new features to allow the Word Processor to access data base files, the Spreadsheet to access other spreadsheet files, and the Data Base to access word processor, data base, and spreadsheet files. For example, ***AppleWorks 4.0*** allows users to create a data base of names and addresses, then "link" the Data Base with a word processor file. Using the glossary function, ***AppleWorks 4.0*** can look up and import an address directly into the current word processing document—without switching modules, copying, or manually formatting. You can also import categories from other data bases (and cells from spreadsheets) and export information to other data bases, providing the Data Base module with relational capabilities.

#### Easier to Use

Making AppleWorks, an already friendly program, even friendlier, was something we thought about carefully. We had to be careful that what we were doing was REALLY making AppleWorks easier. We think we succeeded. For example, ***AppleWorks 4.0*** can remember what order you used for each of your reports and will automatically sort the data base for you. The Spreadsheet now features a pop-up list of functions so users don't have to remember codes when entering formulas. The Word Processor uses distinctive symbols for formatting codes (instead of



*AppleWorks 4.0 gives you a split-screen function in the Word Processor, allowing you to view one part of your document and work on another.*

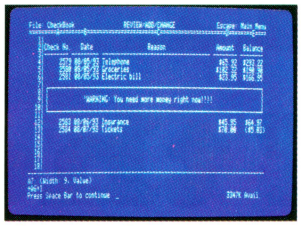


*Several new Activities menus give you more control than ever over AppleWorks. Edit Disk Activities, File Activities, or any of AppleWorks 4.0's 3 editable clipboards—1 for each module!*

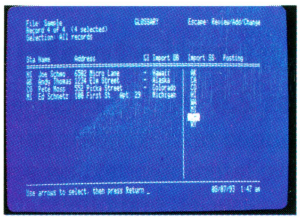
just carets) so boldface and underline can be recognized at a glance, instead of requiring the cursor to be on the formatting code to read it. The "Change Disk" menu allows users to display disk names by pressing OA-? instead of requiring them to know what slot and drive their data disk is in. "Add Files" displays text files and automatically loads them as word processor files instead of requiring users to go to a separate "New File" menu. The Word Processor lets you see tab rulers right in the document. ***AppleWorks 4.0*** even takes away the worry of saving your files with its Auto-Save function.

## More Cool Stuff

Other major features include built-in support for Hewlett-Packard's popular Deskjet printers, faster display and finds in the Data Base, split screen capability in the Word Processor, and date math functions in the Spreadsheet. The Data Base has improved import and export facilities for exchanging data with other computers, and features spreadsheet-style formulas in calculated fields. A global auto-save feature, available in all AppleWorks modules, protects users' work from power failures; and a QuickPath menu lets users set up a menu of their most frequently-used directories.



*Create and edit your own pop-up Alert Dialog Boxes in your spreadsheet. Give yourself valuable warnings about errors in formulas or if your checkbook is out of balance.*



*Build a Pop-Up Glossary in the Data Base of commonly used data, like state abbreviations, area codes, and more.*

Because ***AppleWorks 4.0*** includes TimeOut, adding useful enhancements to help you add fonts, create graphs, or print sideways spreadsheets is easier than ever. In fact, you can even install most enhancements without leaving AppleWorks.

## True To Its Heritage

***AppleWorks 4.0*** remains true to the AppleWorks spirit. Menus remains easy to navigate; commands continues to be simple-to-remember Apple-key combinations; help is still available with a single keypress; all previous functions remains the same.

## 30-Day Money-Back Guarantee

We are so confident that you will love AppleWorks 4.0 that we are offering it to you for 30 days risk free. If you are not 100% satisfied, you can return ***AppleWorks 4.0*** for a full refund (excluding shipping).

## Order Yours Today— Get the FREE VIDEO!

***AppleWorks 4.0*** ships October 1, but you can order your copy now. In fact, until October 31, 1993, you can get the video "Enhancing AppleWorks", a $19.95 value, FREE!

## APPEWORKS 4.0 KEY FEATURES

### SYSTEM
- Compatible with 128K RAM, Apple IIe, IIc, IIc Plus, IIGS; 256K RAM and enhanced Apple IIe recommended (required for One-Touch Commands)
- Includes 5.25" and 3.5" disks
- Hard drive installer included.

### GENERAL
- Built-in TimeOut Engine and Installer Utility
- Built-in One-Touch Command program (UltraMacros player)
- Built-in InitManager
- Disk and File Copying utilities included in Other Activities menu
- Mouse support included
- Screen Saver—protects your monitor
- Auto-Save—automatically saves documents
- Quick-Quit exits quickly
- Easy transfer of Data Base and Spreadsheet information into the Word Processor

### DESKTOP
- Three desktops allow you to load up to 36 files
- Cycle through the desktops using the Tab key
- Save/Remove supports -Up and -Down
- -Q menu includes shortcuts to view all desktops, edit the active clipboard, access File and Disk Activities, and Standard Settings

### ADD/LIST FILES
- Lists up to 255 files instead of the old 170 file limit
- Lists text files and automatically loads them to the Word Processor
- Sort files by Name, Type, Size, or Date
- Easily change desktops, or eject 3.5" disk

### CHANGE DATA DISK
- QuickPath feature lets you choose from a predefined list of pathnames
- Menu can display volume names
- Easily add or drop subdirectories

### CLIPBOARD
- All three applications have their own clipboard
- All clipboards are viewable and editable
- Add to clipboards without deleting their contents
- Any clipboard may be pasted into any file

### PRINTING
- Define up to five printers
- Supports Hewlett-Packard DeskJet printers
- Titles in Spreadsheet files are used for titles at top of each page

### DATA BASE
- 60 categories per record (formerly 30)
- Twice as much capacity per record
- Lookup lists for commonly-used information
- Data entry can be formatted
- Categories can be defined as text, numeric, formula, mask, glossary, import, or export
- Supports spreadsheet-style calculations
- Automatically import from Data Base or Spreadsheet files, or export to Data Base
- Easier Export/Import of text files
- Date categories support dates from 1000 AD to 9999 AD
- Date stamping
- Date math supported in formulas
- Much faster and easier searches
- View changed records since last save
- Match records with changes
- Much faster display of large files
- 30 reports instead of 20
- Reports automatically sort at print time
- Single record reports can have up to 60 lines
- Reformats instantly into multiple columns

### WORD PROCESSOR
- Split Screen allows you to view one part of a file while working elsewhere
- Mail Merge works directly from a Data Base file, using its selection rules
- Mail Merge now lets you fill in forms
- Tighter controls of Find/Replace
- New symbols instead of carets make it easy to identify formatting
- New glossary allows easy entry of formatted data (such as addresses) from Data Base files
- Dictionary can be located anywhere, and can be automatically copied to a RAM disk

### SPREADSHEET
- "3D" feature accesses other desktop files
- Values can be displayed in scientific notation
- Allows quick column width setting by typing in the width number
- Date math is supported via Julian numbers and date formats
- Current column width is displayed at bottom of screen
- Pop-up function list
- Search for numbers and formulas
- New find options allow searches back or ahead by row, columns, or restricted
- Search and Replace text
- May be restricted to 999 rows for maximum speed (9,999 normal maximum rows)
- Recalculated files now marked as changed

BONUS

**Order AppleWorks 4.0 before Oct. 31, 1993 and receive the video "Enhancing AppleWorks" FREE!**

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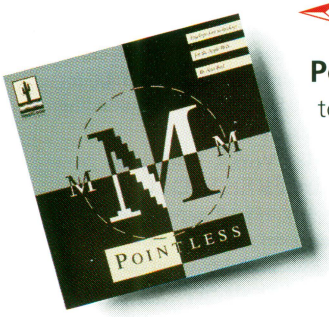
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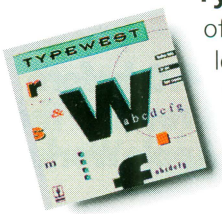
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The quick brown fox
The quick brown fox

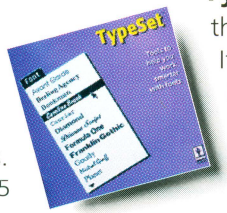
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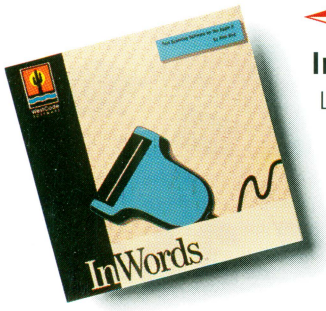
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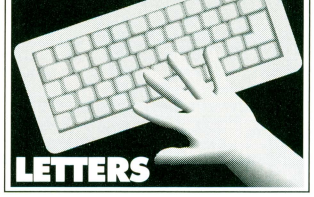
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Dear II Alive,

I've been paying for the GEnie service for the past year but have not used it because I had forgotten how to get online! Your modem articles are fabulous, easy to understand, and interesting. I'm mailing the reader survey under separate cover but I wanted to write to you personally to express my satisfaction with your magazine. Hope it lasts a long time.

Oliver J. Bell
Gray Court, SC

*Oliver: Thanks!*

Dear II Alive,

I'm looking for more fonts and, perhaps, more graphics for *Print Magic,* which was published by Epyx. Also, if anyone does presently own the copyright to this program, maybe we could see about getting it back into production. I'm sure that if you print my address, someone out there can help.

One suggestion I have is to cultivate a list of volunteers who are willing to answer questions on particular topics. I know you don't have time to answer all your mail personally but this way you could at least pass the questions on to others who might be able to help. I'd be willing to become one of your "helpers" in such a capacity. When I first got my computer in 1985, I couldn't even turn it on—I sure could have used some help then.

Harold S. Miller
132-42 Cross Bay Blvd.
Ozone Park, NY 11417

*Harold: As for printing your address—done! Your "volunteer" idea is a good one. Starting in the next issue we'll print a list of volunteers with experience in various subjects. Readers will be able to write directly to these volunteers for help, enclosing a SASE for a reply. These volunteers will also be invited to forward copies of the letters and answers to II Alive for publication. If you'd like to participate as a volunteer, send your name and address to: II Alive, Volunteer Army, P.O. Box 349, St. Clair Shores, MI 48080. Please let us know what topics you're willing to answer questions on (try to keep your area of expertise narrow—"programming" is too broad; "IIGS Toolbox programming in C" would be about right).*

Dear II Alive,

Two years ago I bought the game *Arthur: The Quest for Excalibur* from a software discounter. For various reasons, I never got around to playing it until now. Now I've made a horrifying discovery. The third disk (side 6) has an error on it and my drive can't read it (nor can any of the five other drives I've tried it on). None of the phone numbers included with the game instructions are in service, and Infocom's address is no longer valid. If anyone knows how I can get a copy of this side, please let me know. I'll pay for it. I do not want an illegal copy.

Randall C. Bodine
1461 West Key Parkway, A-6
Frederick, MD 21701

*Randall: Alas, as you discovered, Infocom is history. Perhaps someone out there can help. Let us know how it goes.*

Dear II Alive,

What kind of numbering system do you guys use? Both of my last two issues (May/June and July/August) are marked Volume 1 No. 2.

R. F. Scott
Sun City West, AZ

Dear II Alive,

How come you didn't put a place on your Reader Survey for a return address and shirt size? How are you going to contact the winners of the T-shirts?

David Bley
Searcy, AR

*R. F. & David—You caught us. We are human after all. In the case of the cover, we naturally started with the previous month's cover when creating the July/August edition, then forgot to update every little thing. Obviously it should have been Volume 1 No. 3. In the case of the reader surveys, we just plain forgot. Luckily, nearly everyone put a return address on their envelopes, so we saved those. This has the added advantage of separating the addresses from the surveys to guarantee objectivity in selecting the winners. We'll be contacting the winners shortly to find out what size of shirt they need. (As of this writing, the July 31 deadline hasn't passed so we haven't actually selected the winners yet. More details in the next issue.)*

Dear II Alive,

It's too bad that "Quadriga" can't be called AppleWorks 4.0. I have a suggestion for Joe Gleason. Since the word Apple is "forbidden," call it ForbiddenFruitNameWorks 4.0. This should keep Apple Computer happy, but for the sake of brevity we would all end up calling it FFNW 4.0. Trying to pronounce that is a good way to imitate a cat fight! Oh well, it was just an idea.

Willard Seehorn
Whiteville, NC

*Willard: Joe tells me that Quality Computers has just signed a contract with Claris to take over AppleWorks and AppleWorks GS. He expects to be able to use the name AppleWorks after all, but if things fall through with Apple's legal department, he'll keep your suggestion in mind.*

Dear II Alive,

There's no expiration date on my mailing label as far as I can tell. How do I tell how many extra issues of *II Alive* my paid-up-until-*1995 inCider/A+* subscription gets me? I noted in your editorial that you "promise to fulfill" remaining issues for *inCider/A+*, but that's the first I've heard about it. Why didn't *inCider/A+* say anything about this in their final issue?

Also, I noticed that the pictures in the "No Homework Coupon" article must have been from the IIGS version of *Publish It! 4.* There is no way to duplicate these pictures with the version I have, which is for the IIe, despite the fact that the author said that the project was done on a IIe.

Wayne Neighbors
Florence, SC

*Wayne: There should be an expiration date on your label this time. Sorry about that. As for the* inCider/A+ *switchover, we did send a special edition of* II Alive *to those who formerly subscribed to* inCider/A+. *This special edition contained an insert explaining the options available to subscribers. However, that issue was accidentally* not *sent to people who subscribed to both magazines. So for the record, your subscription transfers on a dollar-for-dollar basis. If you paid $30 for a year of* inCider/A+ *and had eight issues (2/3 year, or $20) left, that would coincidentally get you a full year of* II Alive *($20 for six issues). The actual number of issues of* II Alive *you'll receive depends on the dollar value of your remaining* ***inCider/A+*** *subscription (i.e., how many issues you have left and how much you paid the last time you renewed).*

inCider/A+ *said nothing about stopping publication because that's not the way the publishing industry does things. The last issue of* Softalk *never said it was the last issue, to pick an example from the mists of time. The rule in magazine publishing, evidently, is "business as*

*usual" to the last gasp. Incidentally, the magazine the* inCider/A+ *staff left to start*—Mac Computing—*has already been canned.*

*The "Homework Coupon" article contained instructions for both AppleWorks GS and* Publish It! 4. *The screen shots were from the AppleWorks GS version of the project.*

Dear II Alive,

Your Reader Survey contains the sentence, "The XL size [of t-shirt] fits most normal people; we have XXLs too." Am I to assume that people who need the larger size are abnormal? When I sent in my payment for a 2-year subscription I don't recall having to declare if I was a "normal" person.

Marie Steffens
Blue Springs, MO

*Marie: I apologize. The joke (and it was supposed to be a joke) probably would have been a little more funny if you'd known that your editor wears an XXL—or larger. I did, however, use the word "most," so by no means did I exclude "normal" people from wearing sizes other than XL. I don't think of myself as normal, but I do prefer the term "supernormal."*

Dear II Alive,

From the very first issue, your magazine has been great! Superior features, informative editorials, and a resource guide with a treasure trove of useful information.

Recently a friend of mine showed me a program called GEOS (Graphic Environment Operating System) from Berkeley Softworks. This is absolutely the best productivity software I've ever used, bar none! It incorporates everything from a word processor to desktop publishing, all with the ease of a point-and-click user interface.

Why have I never seen anything about this program in your magazine—or any other, for that matter?

Jim Taylor
Shaw AFB, SC

*Jim: Thanks for the compliments. As for GEOS, it got quite a bit of press coverage when it* was *released five or six years ago. You must have just missed it. The program, which was a big hit on the Commodore 64, wasn't quite as successful on the Apple II. (Nearly every C-64 owner bought a copy of GEOS, and Berkeley was banking on similar success in the Apple world. It simply didn't happen.) Also, GEOS uses a non-standard disk format (a modified ProDOS) that could wreak havoc with disk utilities like repair programs and optimizers. It's not terribly surprising that it languished in obscurity.*

*Berkely Softworks, meanwhile, wrote a version of GEOS called GeoWorks for the PC and changed the name of the company to match the name of the program. They still publish the Apple II version of GEOS, though, and can be reached at 2150 Shattuck Ave., Berkeley, CA 94704, 510/204-8587.*

Dear II Alive,

Could you please dispel the myth that Apple has stopped producing the IIe, IIc, and IIGS? Thank you.

Brian Terrill
Stockton, CA

*Brian: Apple is still making the IIe, which is available through Apple Educational Dealers. The IIc (and its successor, the IIc+) have long been out of production, and the IIGS vanished from dealer price lists last December. We wish it was a myth. But as we've said in the past, Apple's attitude toward the Apple II ceased to have any significance to the computer's fate long ago. It's in our hands now.*


# II Alive Advertising Rates

**GENERAL ADVERTISING RATES**

With our recent takeover of the *inCider/A+* circulation, our rates are changing, but have not been determined.
For details about our rates, contact Matt Spatafora at 1-800-777-3642.

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*II Alive* is published six times a year and is mailed to at least 40,000 each issue.
Contact Matt Spatafora or Carl Sperber at 1-800-777-3642 for more information.




## Sculley Gets New Role

John Sculley is being replaced as chief executive officer by the company's president and chief operating officer, Michael Spindler, formerly head of Apple Europe. Sculley will remain at Apple and focus on looking for "new business opportunities."

## Table Manners for InWords, More Font Stuff

WestCode Software announces the release of *TableTrained,* a collecton of twenty font tables for use with *InWords v1.1,* the popular optical character recognition software. The first *TableTrained* collection includes tables for *II Alive, AppleWorks Educator, Car and Driver, Consumer Reports, Discover, Entrepreneur, Field and Stream, Golf Digest, Home Office Computing, Inc., inCider/A+, Mental Health, Motor Trend, National Reviews, New Yorker, Reader's Digest, Ski, Smithsonian, USA Today,* and the *Wall Street Journal.*

*TableTrained* is fully compatible with the new "font search" feature in *InWords 1.1.* Each table can be used as a starting point for training additional font tables, cutting the time required to read new materials.

WestCode Software also announces *TypeSet,* a utility which displays fonts in their own typeface in the Font menu of IIGS desktop software, such as AppleWorks GS, *Platinum Paint,* and *GraphicWriter III.*

*TypeSet* also provides font management, allowing users to define groups of fonts (placing all the stuffy business fonts in one set, the fancy headline fonts in another, and so on). Users can specify the font sets to be used. *TypeSet* also prints font reports in four layouts—all characters, keyboard equivalents, line displays, and multiple sizes—for reference purposes.

For further information, contact WestCode Software at 15050 Avenue of Science, Suite 112, San Diego, CA 92128, 1-800-448-4250

## Expandable Hard Drive

Econ Technologies announces a new member in its line of mass storage products. The X-Drive is an external SCSI hard drive case designed to house three SCSI storage devices simultaneously. With three independent drive bays, the X-Drive allows users to mix and match any combination of hard drives, tape drives, CD-ROM drives, and even other SCSI devices.

The X-Drive is available in base configurations of 42, 85, 127, 170, 240 and 525 MB. These configurations only use the bottom bay, allowing two additional devices to be installed. Econ also sells SyQuest cartridge drives for installation in the top two bays in 44, 88 and 88c varieties.

The X-Drive works with any computer with a SCSI interface, making it fully compatible with the Apple IIe and IIGS, as well as most other computers. Presently, however, Econ only plans to provide drivers for the Apple IIe, IIGS, and Macintosh.

*Universe Master,* Econ's hard drive utility, is included free with each X-Drive. Universe Master provides a wide variety of essential disk management functions not provided by the Finder, such as incremental file backup, volume image backup, media integrity scan, file system validate & repair, and file un-deletion.

For further information, contact Econ Technologies at 99 N. Central Ave., Suite B, Oviedo, FL 32765, (407) 365-4209.

## Backups Are Your Friends

Backups are now more valuable than ever. Not just for purposes of data integrity, but also for a chance at a free New Orleans vacation! A new award program instituted by 3M honors individuals who have created outstanding personal computer data backup and protection policies for organizations.

The 1993 Data Preservation Awards are intended to help eliminate the nearly $4 billion in annual productivity losses incurred by U.S. organizations due to the inadequate backup and protection of personal computer-based data, 3M says.

The Grand Prize winner will receive a travel package for two to New Orleans—the home of Preservation Hall, of course. The prize includes round-trip airfare, spending money, and a four-night stay at the Hotel Inter-Continental New Orleans. Cash awards will be presented to the Second Prize winner and to the nominators of both the Grand Prize and Second Prize winners.

Nomination forms and further details may be obtained by calling 1-800-888-1889, ext. 33, through electronic bulletin boards and online services, and through participating computer user groups.

## Free GEnie Apple II Navigators Slash Bills

A2 and A2Pro, the Apple II RoundTables on GEnie, announce the free release of three programs to automate on-line work and thus reduce charges for users. *GEnie Master (GEM), CoPilot,* and *TCXpress* off-line readers reduce the amount of time, effort, and expense required to get the most up-to-date Apple II information and programs.

With *GEM, CoPilot,* or *TCXpress,* the user performs most work (including reading and writing bulletin board messages, scanning lists of new files and selecting files for download, and more) while not connected to GEnie. The off-line reader software then logs on, transmits outgoing messages, collects replies to previous messages, and downloads selected files, at the fastest possible speed and without further human intervention. Within minutes it finishes the user's tasks and automatically logs off.

"No other on-line service takes your Apple II as seriously as GEnie. This free release of these programs demonstrates our support for the Apple II community. In the 1990's, GEnie is the only major U.S. network still fully committed to the Apple II," said Dean Esmay, Head System Operator (Sysop) of GEnie's Apple II RoundTables said. "While other national networks let their Apple II areas languish and slowly shrink, we on GEnie continue to expand and find new ways to support Apple II users," he added.

*GEnie Master (GEM)* runs on any Apple IIe (enhanced), IIc, IIc+,or IIGS with 512K of RAM, two 3.5" drives or a hard drive, AppleWorks 3.0, and one of the following: *ProTERM 3* or later, *Talk is Cheap 3.20* or later, or *Point to Point 4.0* or later. *CoPilot* is a IIGS Desktop program that requires 1 MB RAM, a hard drive, System 6.0 or later, and one of the following: *ProTERM 3.0* or later, *Talk is Cheap 3.20* or later, or *Point to Point 4.0* or later. *TCXpress* works completely from within AppleWorks 3.0 and requires 512K of RAM, AppleWorks 3.0, *TimeOut Telecomm,* and *UltraMacros 3.1* or later.

For more information on GEnie services, call: 1-800-638-9636, mail feedback@genie.geis.com, or write: GEnie, c/o GE Information Services, P.O. Box 6403, Rockville, MD 20850

*(Continued on next page)*

### Tweening Is Back

*Fantavision,* originally released for the IIGS by Broderbund Software in 1986, has been reclaimed. Unlike other animation programs, Fantavision animations are object-based. You create pictures based on lines, boxes, circles, and other simple shapes, specifying starting and ending points, and the program automatically "tweens" to create the in-between frames. You can even perform simple "morph" effects with the program The new version is System 6.0 compatible and includes a *HyperStudio* XCMD that allows you to play back *Fantavision* GS animations inside *HyperStudio* stacks.

*Fantavision* is $59.00 from Wild Duck Software, 979 Golf Course Drive, Suite 256, Rohnert Park, California, 707-586-0728.

### Shareware Solutions Lives!

*Shareware Solutions II: The Newsletter,* written and published by former *inCider/A+* Contributing Editor Joe Kohn, debuted in July. As a long-time booster of the Apple II, Kohn has worked in a number of capacities in the Apple II world, including positions as Sysop of the Apple II Forums on The Source and as the Freeware and Shareware Librarian for Big Red Computer Club. He has been a Contributing Editor for *The Apple IIGS Buyer's Guide* and *inCider/A+* and has written more than 150 articles about the Apple II, some of which have also been published in *GS+ Magazine, Call-A.P.P.L.E., Softdisk G-S,* and Big Red Computer Club's *Scarlett.* His freeware "Connections" column has been reprinted by scores of User Groups world-wide, and his work with Apple II computers has been written about in *GS+, Nibble, The AppleWorks Forum, Texas II,* and the *San Francisco Examiner.*

*Shareware Solutions II* will provide timely information about new and classic public-domain, freeware and shareware software, and will continue to provide subscribers with low cost access to that software via the mail. *Shareware Solutions II* will also emphasize the "solutions" part of its name, providing general information that will help Apple II users, educators and hobbyists continue to use their current computer systems well into the next millennium.

Available by subscription only, *Shareware Solutions II* will provide readers with at least 12 pages in each issue, with no advertising. The North American subscription price is $25 for 12 issues; overseas air mail subscriptions are $40. *Shareware Solutions II* began as a bi-monthly, with the eventual goal going monthly.

To subscribe, send check or money order (in U.S. funds) to Joe Kohn, 166 Alpine St., San Rafael, CA 94901. (Make checks payable to Joe Kohn.)

### For Public Consumption

The American Public Domain Club is a new nationwide computer club open to all Apple II owners. Disks of public-domain software, freeware, and shareware will be made available for free copying. Members can send in their own disks, and the requested software will be copied and the disks returned; or members can send $1 per requested disk and APDC will provide the disks.

APDC will publish a new software list every two months, along with the club newsletter, *The Bulletin Board,* which will feature Apple news, programming tips, announcements, and free classified ads. Membership costs just $12 per year.

For more information (or to join), contact the American Public Domain Club, 5821 Kerth Rd., St. Louis, MO 63128. (Make checks payable to Mike Young.) ■


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# The Lost Tribe & Twilight II

## II ALIVE RATINGS

| | |
|---|---|
| ★★★★ | Excellent |
| ★★★ | Very Good |
| ★★ | Good |
| ★ | Fair |
| ☆ | Poor |



### THE LOST TRIBE

★★★

Lawrence Productions, $49.95

Apple IIGS, 1 MB RAM, hard drive or two 3.5" drives recommended.

Reviewed by Jeff Hurlburt

Of all the ways for a tribe to become "lost," having the local volcano blow its stack has to be the most spectacular. Luckily, you and twenty-two other Elkbutts were fishing the river, miles away from the blast, and managed to survive what came to be known as "the night of raining fire." Not so luckily, your chief and the tribe's best spearmen were camping on Mt. Belchfire's summit. Now they're camping in the Happy Hunting Ground. As the strongest, tallest, and smartest survivor (though the latter hasn't yet been proven to everyone's satisfaction), you become the tribe's new leader.

Your first big decision requires little thought. Standing amidst the smoldering ruins of your village, you take note of the approaching rivers of lava and declare, "Me say Elkbutt tribe move!" So far, so good. After some study of the Sacred Mapskin (a 16 x 16 display divided into hexagonal cells, traditionally known in gamer's parlance as "hexes"), a consensus is reached. The tribe will seek the legendary First Home, a lush but distant land on the slopes of a dormant volcano.

The game's main challenge, of course, is to get from here to there. In "Grandfather's Route," the easiest of six scenarios, there are few obstructions. Hunting is often good, and the land has already been thoroughly explored and documented in the map. You should be able to see the First Home after a few days' travel to the East. Later scenarios increase the challenge level by supplying three possible destinations—only one, randomly determined each time you play, is correct—and by blanking out some of the hexes in the map to represent unexplored regions. The terrain gets meaner, too, with more impassable mountains hexes and fewer opportunities for decent hunting. Whichever scenario you choose, you have only twenty to thirty turns to complete your trek. Once winter sets in, everything freezes, including Elkbutts!

Lawrence Productions, the designers of the popular "McGee" series, calls *Lost Tribe* a "social studies simulation" because the problems you encounter and the effects of your decisions are supposed to represent a realistic 'tribal leader' experience. Learning something about Stone Age tools, art, and animals is a worthwhile educational benefit, but the prehistoric backdrop serves, mainly, to keep things simple. Instead of agricultural subsidies, conservation, full employment, and the New World Order of modern politics, you deal with making spears, hunting, keeping everyone fed, resolving petty feuds, and, in general, making decisions which facilitate tribal cooperation and support for your leadership.

That description, though, makes the game sound too "educational"—like something that would be good for your kids to play but not really very much fun for adults. Wrong. While the game is simple enough for kids to operate (thanks to a very forgiving point-and-click interface with iconic buttons for Hunting, Scouting, Spear-Making, and so on), the simulation also features "most wanted" game features like speedy, multi-position save/restore and a High Scores roster. And you'll need the save/restore feature, because the advanced scenarios are *tough,* even for grown-ups.

The game's online reference materials are outstanding. All the facts you need for Stone Age problem-solving are just a click away in the Survival Guide, which features 100 super-hi-res screens on topics such as Animals, Terrain, Leadership Qualities, Tribal Society, Artifacts, and Prehistoric Trivia. An Ancient Mysteries section discusses pole shifts, vortex energy, and Easter Island, and you'll have a much better idea of how much to trust your companions after checking their Personality Profiles. One weakness in the game: you can't access the Guide when dealing with a problem. Your options at that point do not include checking the Survival Guide. This is probably intended to force you to study the Guide in advance so you can be prepared for any situation—after all, you don't usually have time to consult a book in a real-life crisis.

Like dinosaurs, dolphins, and friendly aliens, Stone Age stuff packs built-in kid appeal. *Lost Tribe's* cute multi-palette illustrations, music, and sound effects to drive the point home: Stone Age survival can be *fun!* The set of animated "cave painting" sequences dramatizing activities such as hunting, figure-carving (to improve hunting results), and spear making, are a special treat.

Have no doubts—cute, humorous, and appealing do *not* mean the game is easy to win. Managing food supplies, deciding where to move—and how quickly, choosing when and where to hunt, scout, look for clues, and celebrate, while settling every dispute that comes up is enough to make you envy your former chief's peaceful new home in the Happy Hunting Ground. Even playing the easiest scenario, a few bad hunts and foodless nights is all it takes: the tribe kicks you out of the head honcho position and you lose the game.

Is Lawrence's "ages 8 and up" rating way off the mark, then? Not at all; sometimes kids can be more perceptive about adult politics than adults are. However, a parent, teacher, or older child should be available to assist younger players who don't get it.

It's really too bad about Mt. Belchfire, the old Chief, and your village. But you can't go back, so you might as well prepare for a tough, engaging, long-playing, *fun* stint as the new leader of *The Lost Tribe!*

# II ALIVE

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## TWILIGHT II

★★★

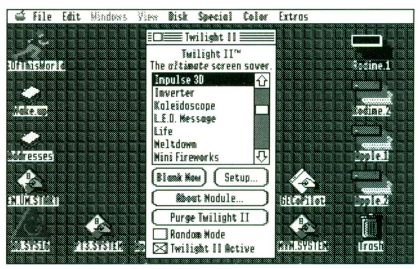
Digisoft Innovations, $49.95

Apple IIGS, 1.5 MB RAM; hard drive.

Reviewed by Bill Carver

*Twilight II* is a screen saver (or blanker) for the Apple IIGS, designed to prevent the burn-in caused when a single image is displayed on the monitor for a long period of time. While the phosphors in modern monitors are designed for long life and are thus resistant to burn-in, it can still happen—especially when you consider that all GS/OS programs use the same menu bar. We've seen more than one IIGS monitor where an afterimage of the menu bar was clearly visible even when the computer was turned off!

Of course, it takes years for such side effects to make themselves seen, by which time it may well be time for a new monitor anyway. So while I'm sure *Twilight II* is effective at preventing burn-in, most people will *really* buy it because it's fun to watch.




*Twilight II* includes 42 different "effects"—colorful animated displays which work within IIGS Desktop programs (AppleWorks GS, GraphicWriter III, Platinum Paint, Teach, the Finder, etc.) *Twilight II* also blanks the screen in 8-bit programs like AppleWorks and even BASIC, but does not provide animated graphics displays in these programs, just a black screen.

As with most screen blankers, you can specify a period of inactivity (in minutes) before the blanker automatically kicks in, as well as specifying that *Twilight II* should never blank the screen when the mouse pointer is in a certain corner of the screen and that it should immediately blank if the pointer is moved to another corner. *Twilight II* also has a "background blanker" feature which allows programs to continue running while the screen is blanked, although this feature should be used with care while printing (it can cause totally black pages in your printout).

Since it's a control panel, you can configure *Twilight II* inside any program that allows access to the Control Panel desk accessory. For added convenience, you can have *Twilight II* add itself to the Apple menu, saving you the step of opening the Control Panel first. Most effects have their own setup screen to allow customization. The Cyclone effect, for example, can generate so many different kinds of displays that you'd be hard pressed to tell they're all from the same module!

On the other hand, the "global" settings (where you select the amount of time permitted to elapse before blanking occurs and the functions activated by moving the mouse to each of the four corners of the screen) are pretty well-hidden. To access them, you must first click the "Setup..." button (which displays the settings of the current module), then select "Options" or "Screen Corners" from the pop-up module menu. Granted, you probably won't change these settings very often, but putting them behind a "Global Settings" button on the main Control Panel would have been much more convenient.

How are the effects? With few exceptions, they're artistically designed and executed, making full use of the IIGS's graphics capabilities. For example, the digital clock module (which bounces the time around the screen in an LED-style font) is made more visually interesting by changing the color of the clock as it moves around. The Kaleidoscope and Cyclone effects make extensive use of color cycling effects. Some of the modules even have sound. My vote for the most hilarious module is Headlines, which generates random tabloid-style headlines (e.g. "Giant Green Orange Seen Heading Toward Cupertino"). My overall favorite, though, is Impulse, which displays 3D wire-frame animations a la the FTA. There's also a module called Phantom which allows you to use effects from Phantasm with *Twilight II*.

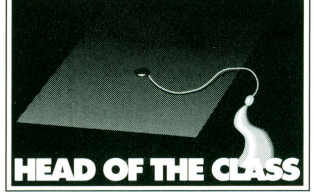
The program performed largely as advertised. I did encounter an incompatibility with Seven Hills' *Kangaroo,* which both Seven Hills and Digisoft are aware of and are working to correct. (I'll miss the marsupial, at least until a re-emergence can be arranged.) Amazingly, I encountered no other incompatibilities with any of my vast array of inits and DAs. The documentation included with the program is complete, clear, concise, and well-organized. While calling Digisoft's tech support number will likely get you an answering machine, calls are returned promptly, often by Jim Maricondo, the program's author. Digisoft also maintains a presence on GEnie, America Online, and Internet.

Overall, I give *Twilight II* high marks for stability, graphic excellence, and just plain fun. It's entertaining to watch, and it's a fine conversation piece when friends drop by. ■

### VENDOR INFORMATION

**Lawrence Productions**
Attn: Renee West
1800 S. 35th Street
Galesburg, MI 49053
800/421-4157

**Digisoft Innovations**
PO Box 380
Trumbull, CT 06611
203/375-0837




# Critical Thinking Skills: Sierra's Gold Rush

**by Jeffrey Damerst**

Last spring my third graders and I purchased Sierra's *Gold Rush,* an adventure simulation game for the Apple IIGS in which Jerrod Wilson decides to head for California in search of gold. First, Jerrod must decide how to get to California: overland by covered wagon, by sea through the Isthmus of Panama, or by sea around Cape Horn and up to California. This is just the first of many decisions players will need to make in this game.

Jerrod actually moves on the screen and can interact with more than fifty other characters. Jerrod will traverse more than 150 screens, some with animated objects. Many of the scenes overlap. Most action occurs as the result of commands, like LOOK ROOM, TAKE BOOK, RING BELL or TALK TO MAN, which trigger on-screen events and display descriptions of conversations.

The game is savable—a good thing, as it will take between 100 and 200 hours to finish the game. It's possible for Jerrod to die during the journey, so saving the progress of the game often makes it possible to undo a bad decision. The IIGS version has excellent sound effects; doors creak when opened, and several sections have a musical score.

The game is slightly copy-protected—the program calls for the answer to a question from a 88 page book called *California Gold.* If the answer is correct, the game proceeds; if not, Jerrod is hung!

The game makes history real to the students. By the time my students solved the game, they had developed quite a bit of knowledge about life during the 1840's and the challenges actually faced by the Forty-Niners. (We started in March and finished in June.)

If you get stuck, you could always buy the game's hint book, which includes suggestions for solving the puzzles in the game, but it doesn't always tell the truth. It does tell you how to score the most points and avoid danger, and has a map to help you stay headed in the right direction.

## PLAYING THE GAME

My third-graders played *Gold Rush* on a single Apple IIGS. To allow the whole class to participate, I displayed the game on a large-screen television (see sidebar). I divided the class into groups of 4 or 5. Group members take turns being the "leader" of their group. I operated the game from the front of the room—that is, I actually did all the typing—but it was up to the groups to determine the course of the game.

When we came to a particular problem, the class worked in teams to come up with possible solutions. These decisions were presented to the entire class, which voted for the best solution. I then typed their choice into the computer, and the entire class held their breath as they waited to see what would happen. If we solved the problem, the entire class cheered.

Sometimes things seem to be going quite well—until you suddenly hit a roadblock caused by a wrong decision made earlier in the game. Since I was saving the game frequently, it was easy to backtrack to a previous milestone and avoid making the same mistake the second time.

*Gold Rush* has a scoring system with a maximum of 250 points. The manual says that 60 points are possible before you even begin the trip, but the best score we've ever achieved is 55 points.

## ACTIVITIES

1. Keep a diary or journal of the trip. Each day, students should enter the events that took place in the game as if they were really Jerrod Wilson. Recording wrong decisions and solutions can keep students keep from making the same mistake twice. Keep a list of items in Jerrod's inventory, and make a suggestions list of where you might use them. Other useful information to record in the diary includes the file name for the day's saved game (so you can easily go back to a particular day) and the score achieved so far.

2. Use a scene or situation in the game as the starting point for a creative writing assignment. Encourage students to speculate about what might happen next (rather than merely rehashing what's already happened) and to

*(Continued on page 43)*

### ONE COMPUTER IN THE CLASSROOM

**by Art Tibbets**

Any Apple IIe, IIc, or IIGS can be connected to a television set, allowing an entire class to participate in computer activities. You can demonstrate a concept or simulation to the whole class at once, or divide the class into teams to compete in a game. You can even keep the computer's original monitor on your desk, facing you, so you don't have to crane your neck awkwardly to look at the big monitor.

All you need is a TV with a "video in" jack. Most current models have this jack, but if yours doesn't, your VCR (if you have one attached) might. Failing all else, you can get an RF Modulator from Radio Shack which will put your computer's signal on the TV's channel 3 or 4.

If you have an Apple IIGS with an RGB color monitor, you can drive two monitors as long as one is RGB and one is composite. RGB monitors use the 15-pin connector on the back of the computer. Composite monitors use the RCA plug. If you're using a IIGS with an RGB monitor, just connect the TV (or VCR's) Video In to the IIGS's Composite Video Out using a standard RCA video cable.

If you use an Apple IIe or IIc, or a IIGS with a composite monitor, you need an RCA Y-adapter, one which connects two female RCA jacks to a single male RCA plug. This will let you connect both the TV and the computer's normal monitor at the same time. Plug the Y adapter into the computer, then plug the monitor and the TV into the Y adapter.

Turn on the TV and the computer, select "Video In" or "Aux In" on the TV, and you should be all set. (If you're going through a VCR, set the VCR to "Video In" or "Aux In" and set the TV as if you were watching a video tape.) Turn the sound down on the TV.

If you're going through a VCR, you have the additional capability of recording the entire session on videotape. Just put in a blank tape and hit Record. You might even want to make your own titles and animations for class activities with a program like Broderbund's VCR Companion.

# THE MACRO EXCHANGE

Send us your best macros—for UltraMacros or any other macro-driven program. If we use yours, we'll pay you $10! Send your macros to: II Alive Macro Exchange, P.O. Box 349, St. Clair Shores, MI 48080. Please include a disk if your macro is longer than half a page or so. All macros submitted become public-domain and can be used by anyone for any purpose.

## DB Category Sizer

This UltraMacros 4.2 macro finds the longest entry in a data base category, then adjusts the width of that category (in the multi-record layout) so that it will display that longest record without cutting it off. The macro also uses a thermometer to show progress.—Robert M. Rowe, San Diego, CA

```
labels
.CatCalc.1.1
\sa-K Category width
#width = peek $AB8C

start
K:<adb: oa-l: zoom:

{Set up variables }
      Max_Length = 0 :                              // for longest record
      $12 = "Finding longest record" :              // thermometer message
      Number_Recs = .eof :                          // for/next loop counter
      Width = #width :                              // get category width

{ Set up thermometer }
      .cls 2 : .box 255,9,40,6,1 :                  // draw box for thermometer
      .writestr 255,11,$12
      .Therm 23,12,0,Number_Recs                    // initialize thermometer

{ Find the longest record }
      For K = 1 to Number_Recs
      Display #ON : .Therm 0,0,K,0 : Display # OFF : // update thermometer
      $11 = cell : L= len $11 :                     // get length of data
      If L > Max then Max = L : endif :             // keep longest found
      Down : Next K : oa-1                          // check all records

{ Adjust the width }
// already correct width:
      If Max = Width then esc : Display #ON : esc stop :
// make category wider:
      else If Max > Width then : N = Max - Width : oa-L rtn (oa-right) N : esc : esc :
// make category narrower:
      else N = Width - Max : OA-L rtn (oa-left) N : esc : esc :
// exit & update display
      endif : esc : Display #ON : esc>!
```

## WP Word Deleter

This UltraMacros (works with versions 3 and 4.x) macro deletes a word from a Word Processor document. Although there are other, simpler ways to do this, this macro properly handles a wider variety of conditions and leaves the cursor where you would expect it to end up. (Simpler versions act like they have "bugs" under some circumstances.) The macro does not delete tabs, spaces, or carriage returns around the word (except to avoid leaving two spaces in a line).—Ned Westveer, Jackson, MI

```
<Del>:<asr><ahead:                                  // go to first space after word
      oa-Z                                          // zoom in
      X = peek #curschar:                           // check character after word
      If X = 255 : oa-left oa-Y:                    // last word on line (found carriage return)
      Else left oa-D right oa-left rtn:             // delete word
      IfNot X = 222 oa-del>!                        // delete space, but not tab

<del>:<awp><Z = peek #wpzoom                        // save zoom status
      zoom:                                         // zoom out
      Begin:
            X = peek #curschar: Y = peek #Curhor    // get character & horizontal position
            If x = 160 and Y > 0 oa-left rpt: Else: // jump left until done
            IfNot X = 160:                          // if on a word (not column 1 & (rtn or tab)
            sa-del:                                 // delete the word
      EndIf:
      IfNot Z = peek #wpzoom oa-Z>!                 // restore zoom status
```




**QUESTION:** I inadvertently selected the "Add to dictionary" option (in AppleWorks' spelling checker) for the word "foe." Now, every time I misspell "for" as "foe," the spelling checker doesn't find the error. Is there any way to edit the custom dictionary to remove the mistake?

*Ron Iwankovitsch*
*Ubly, MI*

**ANSWER:** I'm surprised "foe" isn't in the main dictionary—it *is* a word, after all—but the answer to your question is, yes, it's extremely easy to edit the custom dictionary. It's an ordinary text file. Use AppleWorks' "Add files to Desktop" option to "Make a new file for the Word Processor" from a "Text (ASCII) file" and select the file CUST.DICTIONARY from the file list. Then find "foe" and delete it. Use the "Print to a text (ASCII) file" with "Standard text format with Tabs" option to re-save the file. (If you have some other program which will edit standard text files, you can avoid AppleWorks' convoluted text file manipulations and edit the file directly.)

**QUESTION:** In your last "Rumormonger" column you said that "Standard Apple 3.5 drives are physically incapable of reading the MFM encoding of MS-DOS." But Applied Engineering's PC Transporter manual states that the drive *is* capable of reading both GCR (Apple) and MFM (IBM) low-level formatting, and proves it by letting you read MS-DOS disks in Apple 3.5 drives attached to the PCT. How is this possible?

*David Tock*
*Lockport, NY*

**ANSWER:** AE is right—the disk drive is capable of reading MFM low-level formatting with an appropriate controller chip. The IWM chip built into the IIGS doesn't have the capability. The SWIM controller on the Apple SuperDrive controller card (and in all Macs since the SE/30) will read MFM encoding, but requires an Apple SuperDrive 1.44 MB drive to do it—it won't work with the standard 800K model. While we've occasionally heard reports that disks formatted with the PCT are difficult to read in a true MS-DOS machine, there doesn't seem to be a problem going the other direction. The MS-DOS FST in System 6.01 even works with the PC Transporter drives.

**QUESTION:** I own an Apple IIGS and am experiencing a recurring and extremely frustrating problem—the computer just stops. In a variety of programs (Print Shop, AppleWorks, Writers' Choice Elite, and various games) the computer will, for no apparent rhyme or reason, freeze up. The only solution is rebooting, and sometimes this is necessary two, three, or more times. After that, the programs will run just fine—for a while. An authorized Apple service center was unable to find anything wrong with the machine. Help!

*Carl Swedberg*
*Cheboygan, MI*

**ANSWER:** You don't mention which, if any, cards you have in your computer. It's possible that the problem you are experiencing is related to overheating or an overstressed power supply, due to too many cards inside the computer. Apple recommends a fan when you have more than two cards in the computer, and I'd suggest a heavy-duty power supply when you exceed four cards. If you took all the cards out of the computer when you took it to the Apple dealer, that may explain why they couldn't find anything.

So if you have several cards inside the computer, I'd suggest removing some of them for a while and see if the problem decreases or goes away entirely—this can pinpoint a power supply deficiency. Try removing the top from the computer for a while as well—with all the cards in—to help determine whether the problem is overheating.

Other things you should try: Check all cables to make sure that none of the pins are bent and that all connectors are firmly in place. Check all the socketed chips in the computer to make sure that they're well seated (press them down firmly and see if they "give" under the pressure) and visually ensure that all the pins on each chip actually go into the socket and are not bent under the chip. Remove each card and inspect the gold fingers for corrosion or dirt (rub the pins lightly with an eraser to remove any gunk), then re-install the cards, making sure they're firmly seated.

You may also have an obscure software conflict with some desk accessory or init. Try starting up with the Shift key held down (if you are running System 6) or booting from an unmodified System Disk (if you're using an older System Disk) before using your programs.

If none of these suggestions provide any relief, you may have a defective main logic board. Before you let your Apple dealer replace it, though, check with Pre-Owned Electronics, Shreve Systems, and Alltech Electronics—they may be able to sell you a reconditioned logic board for much less than your dealer, and it's easy to install if you know how to use a screwdriver.

**QUESTION:** How can I free up some slots in my Apple IIe? Mine are all being used. Does anyone make a Smartport card that will control four disk drives (two 3.5" with DB-19 connectors and two 5.25" with 20-pin connectors)? How about a SCSI card which will control those drives along with my Sider D4T hard drive and T6 tape drive?

*James Davis*
*Hayward, CA*

**ANSWER:** There once was a card called the MultiKache (from Ohio Kache Systems) which could control both 5.25" and 3.5" drives. However, they all needed to be daisy-chainable (your 20-pin drives wouldn't work or would need an adapter of some kind). The MultiKache card also had its own microprocessor and cache memory to tremendously speed up disk access, and an optional piggyback card would let the card control SCSI devices as well. It really was one of the most advanced Apple II peripherals we've ever seen. However, the card was far too expensive for the market and the company went out of business. (Some of the engineers from OKS went on to form CV Technologies, who manufacture a SCSI cache controller.) We still have one around here somewhere, but it doesn't work.

You might consider getting rid of two of your drives (one 3.5" and one 5.25") and finding a Laser Universal Disk Controller to control the remaining two drives. (This only works if the 3.5" drive is the "dumb" Apple 3.5 drive, not the UniDisk 3.5.) Since you have a hard drive, you probably only use the floppy drives for three things: 1) copying new programs onto the hard drive, 2) running copy-protected programs that won't go onto the hard drive, and 3) backing up the hard drive. Since you have a tape drive you don't even need the floppies for reason 3. I suspect you don't really need four floppy disk drives on your computer!

Multifunction cards include the Serial Pro from Applied Engineering (includes a serial interface and clock on one card) and the PC Transporter, also from AE (in addition to being an IBM PC XT on a card, it will also control two 3.5" drives and provide up to 768K of memory expansion). These can free up a slot or two. If you have an accelerator card, you might consider replacing it with a Zip Chip; if you have a clock card, consider replacing it with a No Slot Clock.

**QUESTION:** When I got System 6 for my IIGS, I started having one big problem. When the computer displays an alert window, it crashes after drawing the window but before

drawing the buttons. It's really taking me a long time to do my work—a job that used to take 30 minutes now takes 4 hours under System 6 because I have to keep restarting every time I make a mistake that brings up an alert. What can I do?

*Elie Harriett*
*Newark, DE*

**ANSWER:** The problem you describe is definitely not a feature of System 6. System 6 is probably not installed properly on your hard drive, or you have some program (an init or desk accessory) which is not compatible with System 6. The remedy is to re-install System 6.

First, start up the System 6 System Disk (you may need to change the Startup Slot in the Control Panel to do so). Open your hard drive's startup partition (the one that usually appears at the upper right corner of the screen) and change the name of the System folder to Old.System. Now, start up the System 6 Install disk and use the "Easy Update" button to install System 6 onto the hard drive. After completing this installation, click the "Customize" button and install drivers for your printer, disk drives, and other peripherals, along with "All Fonts." Then change your Startup Slot back to its original setting (usually 7 or Scan unless your hard drive is in some slot besides 7).

With a fresh install of System 6, your software should all work properly. Your old System folder contains all the desk accessories, inits, and other programs you were using; add them to the new System folder one by one (restarting after each addition to see if the problem returns—if so, you have discovered an incompatibility). If you find an incompatibility with one of these programs, contact the author or the publisher to find out if they know about the problem and if there's a solution.

**QUESTION:** How does the IIGS "3200-color" mode work? I assume that it lets you have one palette for each scan line on the graphics screen, but I'm interested in how this is accomplished. The assembly code I looked at had over 100 PEA instructions, and didn't make any sense to me. How do I create 3200-color graphics?

*Lucas Scharenbroich*
*Pequot Lakes, MN*

**ANSWER:** As you know, the IIGS has 200 lines (of 320 or 640 pixels, depending on the mode) on its super-hi-res (SHR) graphics screen. The simplest way to use this screen is for the whole screen to share a single palette of 16 colors—this is the method used by most paint programs and is the reason most people think of the IIGS as a 16-color-at-a-time machine.

However, the IIGS does support 16 separate palettes, and you can tell the machine which palette to use for each line. This method, used in programs like *Dueltris* and *The Lost Tribe,* permits display of up to 256 colors on each screen, although your graphic must be carefully designed so that each display line uses only 16 of the possible colors and that there are no more than 16 "groups" of colors in total. Additionally, when scrolling the graphic vertically, you must also remember to scroll the palettes, otherwise the picture will look really strange as the wrong palettes are assigned to the wrong lines.

3200-color mode uses a bit of trickery to further expand the IIGS color capability. As you guessed, it allows each screen line to have its own palette of 16 colors. However, the IIGS hardware still only gives you 16 palettes—not 200. In order to display 200 separate palettes, the software must actually *change* the contents of the palette for each screen line. Luckily, the IIGS contains softswitches and interrupts that programs can use to find out where the monitor's electron gun is scanning at any given instant. So a 3200-color picture viewer must change the palette at *exactly* the right time—just before each screen line is displayed. In order to do this quickly enough, the stack location is set to the location of the palette and a series of PEA instructions "pushes" the data into the palette. This normally would not be necessary except for the fact that timing is extremely critical here. Needless to say, any other interrupts (mouse, AppleTalk) which would consume CPU time are locked out during this process.

When displaying a 3200-color picture, then, 90% of the computer's time is spent swapping the palettes in and out of the display memory. This makes 3200-color mode virtually useless for, say, writing an arcade game, since there's not nearly enough CPU time left over to do anything as complicated as moving a shape around on the screen.

There are two ways to create 3200-color pictures. One is with the Enhanced VisionPlus video digitizer. The software for this digitizer lets you convert a saved "raw" file to a 3200-color picture. The other is with DreamGrafix, a 3200-color paint program from DreamWorld. DreamGrafix has its limitations (the fact that each line has an independent palette can make drawing a simple vertical line in a solid color a real challenge) but it's currently the only way to create your own original 3200-color art. Oh, it also does 16 and 256 colors. ■

# MORE FREE BLOCKS

by Jack R. Nissel, Guest Tech

Have you ever just needed just one or two extra blocks on a disk? Apple did on some versions of AppleWorks. They made room by reducing the number of directory blocks on the volume.

Each ProDOS disk contains four main directory blocks. Each directory block can hold 13 file entries, except for the first, which can only hold twelve because it also contains the disk's volume header. This is the source of the familiar 51-file limit. Naturally, when you reduce the number of directory blocks (so that the blocks can be used to store files), you will not be able to store quite as many files in the disk's main directory.

Additionally, there's one block—block 1—which is not used on ProDOS disks, but it's marked as being used nonetheless. (This block would normally store a boot block for SOS, the Apple III operating system—but when was the last time you wanted to boot up an Apple III?) We can always free up block 1.

To modify a disk to have more free blocks, start with a fresh formatted disk. You will need a "block editor" program like Block Warden (part of ProSel) or the one in Copy II Plus.

| If you free up this many more blocks: | 2 | 3 | 4 |
|---|---|---|---|
| You will be able store this many files: | 38 | 25 | 12 |
| Follow the steps below in the appropriate column: | | | |
| **A** Read block $0006 and change byte $00 to: | $43 | $47 | $4F |
| **B** Write the modified block back to block: | $0005 | $0004 | $0003 |
| **C** Read block $0002 and change byte $27 to: | $05 | $04 | $03 |
| **D** Write the block back to block $0002 | | | |
| **E** Read block | $0004 | $0003 | $0002 |
| **F** Change byte $02 of this block to $00 | | | |
| **G** Write the modified block back to block | $0004 | $0003 | $0002 |

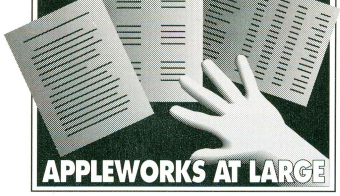
Normally, ProDOS uses blocks $0002, $0003, $0004, and $0005 for the volume directory. We must keep block $0002, because the volume directory always starts there, but we can truncate some or all of the remaining directory blocks.

Step A edits the volume's bit map (block 6). This tells ProDOS that the blocks we are freeing up can, in fact, be used from data storage. In step B, we write the modified bit map block back to disk—but instead of writing it back to block 6, we move it back one, two, or three blocks so that it will follow immediately after the truncated directory.

Step C modifies the volume header so that ProDOS will be able to find the bit map in its new location. Step D writes the modified header back to disk.

In step E and F, we read the last block of the truncated directory and zero out its link pointer. The link pointer tells ProDOS where to look for the next directory block. By zeroing it out, we are telling ProDOS that there are no more directory blocks. In step G, we write it back to disk.

If you just want to free up block 1, and not truncate the directory at all, simply read in block $0006, change byte $00 to $41, and write the modified block back to block $0006. You will still be able to store 51 files on the disk but you'll have an extra block to do it in!




# Data Basics

**by Steve Miller**

Why did you buy a computer? Maybe it was for your kids. Maybe you got it for yourself, so you could "learn to use a computer" and write that novel you've always been meaning to write. Or maybe you got it because everybody was doing it, and the price was right, and it seemed like the thing to do. These days, you might use it occasionally to write a letter or play a game, but that's about it.

If that's the case, you're missing out on much of the real benefit of owning a computer. Popular personal computer applications include word processing, data bases, spreadsheets, telecommunications, page layout and desktop publishing, education, and games. If you're only using your computer to write letters, you've barely scratched the surface.

Especially if you have AppleWorks. AppleWorks consists of three modules: a word processor, a data base, and a spreadsheet. Furthermore, AppleWorks is an integrated package, meaning that it lets you transfer information from any module to any other.

Spreadsheets are useful tools for people who keep track of money and expenses and need to make financial projections—particularly in areas like manufacturing and sales. The power of spreadsheets is that you supply the formulas that determine how all the numbers are related, in as much or as little detail as you like. Then you can change a number and see what happens to the results, even if there are dozens of interrelated formulas that affect the answer.

Spreadsheets are great for financial simulations or "what if" speculations. You can use them for much simpler tasks (like your household budget or checking account), but it's probably easier to just keep track of those with a pocket calculator. AppleWorks' spreadsheet module can be exceptionally useful to the small business owner, but many home users will find spreadsheets to be overkill for their financial planning.

That's certainly not the case with the data base module. Data bases are great for keeping track of things—especially things that can be organized into lists. The next time you begin working on a project around the house, ask yourself if it consists of a bunch of facts that you need to keep track of in a list. If so, the project is a perfect candidate for the AppleWorks data base.

A data base is, simply put, a collection of facts. To make things useful, the data base is usually arranged in some useful order. The card catalog in a library is a familiar data base—one that's stored on index cards, not a computer. (Many libraries are computerizing their catalogs, but then they're not "card" catalogs anymore.) The structure of a computer data base is very similar to the structure of the card catalog; you just need to learn some new terminology (see Figure 1 for a simple analogy.)

*A data base is, simply put, a collection of facts. To make things useful, the data base is usually arranged in some useful order.*

A data base is like a set of index cards on which you have pre-printed the types of information you'd like to record about each item on the list. In computer lingo, these cards are called "records." Every record has the same blank lines, or categories, for you to can fill in. Once the blanks are filled in, the information in that particular record is always kept together. Figure 2, for example, shows the blank categories in one record for a small company's employee data base.

If you were keeping this data base by hand, you'd have one index card for each employee. In an AppleWorks data base, you'd have one record for each employee.The categories, which are the blanks that have to be filled in, are the same on every index card, or computer record—their contents, on the other hand, can be different for each record. (Most data base programs other than AppleWorks call the blanks *fields* instead of categories.)

Figure 3 shows a completely different type of record from a different data base—one used by a teacher to track student grades. In this one, the categories have already been filled in.

This grading data base would start out almost blank, with only the student's name entered. (Naturally, there would be one record for each student.) The data base would be updated after every quiz and exam is graded, and, at the end of the year, would be a permanent record of the student's performance.

Can't think of a good use for a data base around your house? You're not thinking hard enough! Figure 4 lists some fairly universal possibilities.

## CREATING A DATA BASE

From AppleWorks "Main Menu," select "Add files to the Desktop," and then select "Make a new file for the Data Base" (option number 4). Finally, select "From scratch." Press the Return key after every choice, selection, and entry.

You'll be asked to name the file—be sure to choose something descriptive and unique. You're limited to 15 characters, and the name must start with a letter. Only the letters A-Z, numbers 0-9, periods, and spaces are permitted. Press Return after entering the name.

Next, following the instructions on the screen, name your categories. Remember, the categories are the bits of information you need to keep track of about each item in your list. Think ahead to categories you might need later. Keep the names short but meaningful. The names you enter here will appear on your blank records when you fill them in later. Erase the default first name, "Category 1", with Apple-Y. Type the name of the first category and press Return. Then type all your other category names, pressing Return after each.

You will want to add several "extra" field names, which can be called X1, X2, X3, and so

on. if you decide later to add more fields to your data base, it's easier to change the name of existing fields than to add completely new ones.

If a category will contain dates, be sure to include the word "date" somewhere in the category name—"Birthdate" instead of "birthday," "Hire date," and so on. AppleWorks will automatically convert entries in these categories into date format and will later be able to sort your records chronologically. You can even enter dates in number form (9/13/51) and AppleWorks will convert it to word form (Sep 13 51) the instant you hit the Return key.

After you've entered your category names, including some extras, press Escape. AppleWorks prompts you to begin creating your first record by pressing the Space Bar.

## ENTERING DATA

A blank record will appear, with each field on its own line. Type your data into the blank categories, following each category with a Return. If you make a mistake and notice it before pressing Return, you can use the Left Arrow key to backtrack to your mistake and the Delete key to correct it. If you've already pressed Return when you notice the mistake, use the Up Arrow to move up to the proper category and correct it.

If AppleWorks beeps at you, it's probably because you are trying to use the Up or Down Arrow key to move to the next category without accepting the contents of the current category. You must explicitly complete your data entry (or changes) by pressing Return before you can use the Up or Down Arrows.

After entering the data for the first record, press Apple-Down Arrow to skip your extra categories and move to the next record. When you've entered the entire data base, and pressed Return after the last entry, press Escape.

You'll now see all your records (or as many as will fit on the screen) in a list format. This is called the multi-record layout because you can see more than one record at a time. Use the Up and Down arrows to move through your data base (or the Arrows in combination with the Apple key to move in larger jumps).

Save your work by pressing Apple-S. Remember to save your file again whenever you make changes to the information it contains. (It's not necessary to save your data base if you later load it and simply view or search the data.) If your data base is extensive, it would be a very good idea to save an additional copy on a different data disk.

## VIEWING RECORDS

To see all the information in any one record, put the cursor anywhere on that record's line and press Apple-Z (for Zoom). In this single-record layout, pressing the Apple key together with either the up or down arrow allows you to review each record, one after another, in the same order they appear in the multi-record layout.

Pressing Apple-Z at any time zooms you out again to the multiple-record view. Pressing Apple-1 moves you immediately to the top of the list; Apple-9 moves you to the bottom; or choose any number in between to move proportionately through the list.

Blank fields can be edited (or existing categories edited), at any time, in either view. Remember to press Return after every entry, and to save your data (Apple-S) from time to time.

## OUT OF SPACE

We're out of space for this issue. In the next installment of "AppleWorks At Large," we'll take a look at how to set up record selection rules (a powerful variation on the Find command), change your on-screen layouts, and create and print reports. See you then! ■

**FIGURE 1: A Card Catalog and the AppleWorks Data Base**

| Library | AppleWorks |
|---|---|
| card catalog | data base file |
| one catalog card | one record |
| one bit of information on a catalog card | one category or field |

**FIGURE 2: Simple Employee Data Base Record**

```
FIRST NAME:_____
LAST NAME:_____
ADDRESS:_____
CITY:_____
ZIP CODE: _____
HOME PHONE: (_____)_____
DATE HIRED: _____
HOURLY RATE:_____
```

**FIGURE 3: Sample Grading Data Base Record**

```
STUDENT GRADES - SCIENCE 101 - 1992-93
======================================

LAST NAME: Jones
FIRST NAME: John

Quiz #1: 75 Quiz #4: 90
Quiz #2: 84 Quiz #5: 92
Quiz #3: 79 Quiz #6: 94
Mid-Term: 82 Final Exam: 94

Mid-Term Grade: B Final Grade: A
```

**FIGURE 4: Uses for AppleWorks Data Base module**

```
PERSONAL:
name/address/phone number book
recipe list
library: CDs, records, or books
collections: stamps, coins, trading card
srosters: little league, soccer, basketball teams
membership: social groups and clubs
homework assignments and deadlines
income tax deductions
invitations, with addresses, RSVP, and thank-you status
inventory of valuables (with serial numbers) for insurance purposes

BUSINESS:
employee lists
parts lists
catalog items
inventory
properties, tenants, and rents
investments
accounts receivable
back orders
client mailing list (the data base will print your mailing labels!)
```

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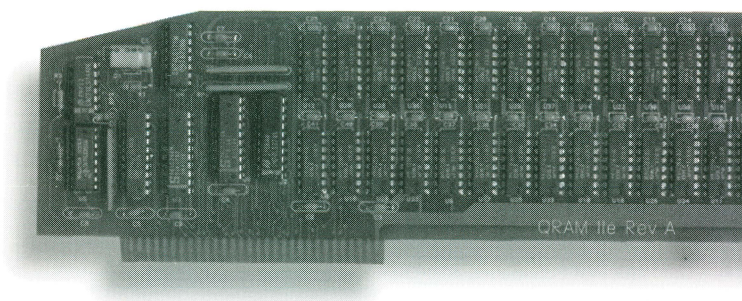
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## II ALIVE

# Writers' Guidelines

**GENERAL:** *II Alive* welcomes article submissions from anyone, whether you're a professional writer or just an ordinary Apple II lover with some tips to share. We don't reject submissions purely on the basis of typos or grammar—if an article's *content* is unique, enthusiastic, creative, or otherwise grabs us by the lapels and screams "Publish Me," we're willing to overlook a few mistakes. On the other hand, the fewer mistakes a submission contains, the less work we have to do in order to get it ready for publication. And that means you might just get more money for the article.

**STYLE:** Write in a clear, simple style. If there is any doubt in your mind that a typical reader of your article will be able to understand something in your article, explain it. It may be helpful to organize your thoughts with an outline first. If you're writing a fairly long article, you might want to break it down into sections, each focusing on one major point. Each paragraph should convey a complete thought, with one sentence that states the thought and additional sentences that support it. Use examples and explanations (even illustrations, tables, graphs, and so on) wherever necessary. If you don't have much writing experience and don't think you can pull off something like this, find a collaborator who can help you. You may want to base the general format of your article on other articles in this magazine.

**LENGTH:** Your article should be as long as a complete treatment of your subject requires. It's better to submit an article that's too long than one that's too short. We can remove material much more easily than we can add it. We might even decide to run your article in two or more parts.

**FORMAT:** Submit your article to us on paper and on disk. The paper version should be double-spaced, and printed on only one side of standard 8.5" x 11" paper. Make sure your name and the page number are on every page. Don't use fancy type styles; a monospaced (non-proportional) typeface at about ten characters per inch is best. Use the best print quality your printer is capable of, with a fresh ribbon, if possible. Use underlining to indicate words you would like italicized. The disk version can be in AppleWorks, AppleWorks GS, or standard ASCII text on a ProDOS 3.5" or 5.25" disk, or in Microsoft Word, MacWrite, or standard ASCII text format on a Macintosh disk. If your submission contains other materials (illustrations, program listings, and so on), include both disk and printed copies of these as well (illustrations can be in any standard Apple II, IIGS, or Macintosh format). Include a brief cover letter identifying yourself and your submission. Remember, these are just guidelines—we won't reject your article out-of-hand if you don't follow them—but they do make things much easier on us.

**PAYMENT:** We pay on publication. Once we print your article, you will receive payment within thirty days. Payment ranges from $100 to $500 depending on the length and quality of the submission, with most articles earning in the $150-$250 range.

**RIGHTS:** When we pay you for an article, we buy serial rights for the computer publication market. This means that we can print it in magazine form, and are the only computer magazine with permission to do so. You cannot sell the article (even if it's revised) to another computer magazine, though you could sell the article (or another article on the same subject with a different slant) to a magazine in a different field. (*Example:* If we published your article on stamp-collecting with the Apple II, you could not sell an article on stamp-collecting with the Apple II to another computer magazine. But you could sell a similar article to a stamp-collecting or hobby magazine, with a different slant.) We cannot accept simultaneous submissions (articles which are submitted to more than one magazine at once). That would put us in a difficult position if both *II Alive* and another magazine selected your article for publication.

**Queries.** If you're about to invest a lot of time and effort in writing an article for submission to *II Alive*, you may want to query us about the article first, especially if it seems likely to you that someone else could be writing a similar article. Write a one-page letter introducing yourself and your proposed article, outlining the article's major points. If you are proposing a lengthy article or a series, a more detailed outline could be included as well. We will let you know if anyone else is already working on a similar article for us, and possibly offer some additional suggestions to help you prepare the article. Our reply to your query is *not* a guarantee that we'll accept your article. It just says that we don't know of anyone else writing one like it. We will tell anyone else who proposes a similar article that the topic is being covered; however, this does not mean that we will wait for you to finish your article if someone else sends us a finished piece first.

**REVIEWS:** Since we're a magazine, manufacturers often send us products for review. We distribute these products to our staff writers and review editors. Therefore, you should definitely query us before sending us any reviews—chances are, we already have someone working on it. We also have stricter guidelines for reviews, which have to hit certain points and follow a certain form to be effective. (If you are interested in becoming a regular reviewer for *II Alive*, send Jeff Hurlburt, our review editor, a letter containing your qualifications. His address is 7814 Santa Elena St., Houston, TX 77061.)

**SUBMISSION:** Send your submissions to: *II Alive*—Editorial Dept., P.O. Box 349, St. Clair Shores, MI 48080, USA. As soon as we get your submission, we will send you a post card telling you that we received it, and letting you know when to expect a response. If you don't receive the post card within thirty days after submitting, send a follow-up letter or call us at 313/774-7200 extension 839.




### FixFontMgr (IIgs)

Nathan Mates, *Freeware*

With System 6.0.1 out, you'd think that most of the bugs in System 6 are fixed. Well, they are, but there's a new bug in the Font Manager. If you use Pointless and have a TrueType font with no bitmap fonts, the Font Manager will crash under certain circumstances. The solution is to either save a bitmap font for each TrueType font you have, or, better yet, put this patch file into your System.Setup folder.

### JumboDesk (IIgs)

Jason Simmons, *Shareware*

JumboDesk is a IIGS New Desk Accessory that allows the Desktop to be larger than the screen. The program automatically scrolls the desktop for you when the pointer reaches the edge of the screen. If you've seen the program "Stepping Out" on the Macintosh, well, it's a lot like that.

While JumboDesk is definitely worth trying out, some minor problems and incompatibilities have been noted. For instance, imagine what happens if you leave a disk's window open outside the normal screen boundaries, then give the floppy disk to a friend who doesn't have JumboDesk. (Remember, the window's position is saved on the disk!) On your friend's system, the window is outside the screen boundaries and is thus inaccessible. The window can be moved back onto the screen by holding down Control as you double-click the disk icon, but it is an inconvenience, and could be confusing to users not familiar with JumboDesk.

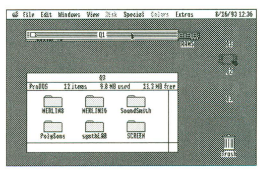
### MacSoundGrabber (IIgs)

Steve Stephenson & Seven Hills, *Freeware*

MacSoundGrabber is a simple utility that converts digitized sound files from Macintosh format to System 6 rSound format. There's not really much to the program, except that now all of those great Mac sounds are easily usable on your IIGS!

### WinFlate (IIgs)

Jason Simmons, *Freeware*



WinFlate is a IIGS New Desk Accessory that lets you "deflate" a window so that only its title bar is visible, much like "WindowShade" for the Macintosh. As you can imagine, this is invaluable for reducing Desktop clutter. You can set the preferences to hide and reveal the window with a single or double click in combination with any modifier key (e.g., option) or—the most convenient way—a simple double-click with no modifier key.

### Sound Editor (IIe/IIc)

by Michael Mahon, *Freeware*

The first time we ran this program, all we could say was "Wow!" Sound Editor gives your IIe or IIc the ability to play digitized sounds through the built-in speaker—and, unlike Soft-DAC (mentioned in a previous installment of this column), the sound produced by the program is extremely clear, with no annoying squeal, rivaling the output of the IIGS or Mac. (For the record, it's a software-based 5-bit digital-to-analog converter with a carrier of 22 kHz.)

After playing with this for a while, we couldn't help reminiscing about all those older Apple II games (like Castle Wolfenstein) that used primitive digitized sound. Imagine how much better the games would have been with clearer sound!

Beyond the simple thrill of just playing digitized sounds on a IIe, of course, the program also provides simple editing facilities. The documentation includes a history of Apple II sound generation and explains exactly how the program works—fascinating reading for the technically oriented.

The volume of the Apple IIe speaker is pretty low, so we suggest a set of amplified speakers. Playback is significantly distorted on accelerated machines, so turn off the accelerator while using the editor. ■


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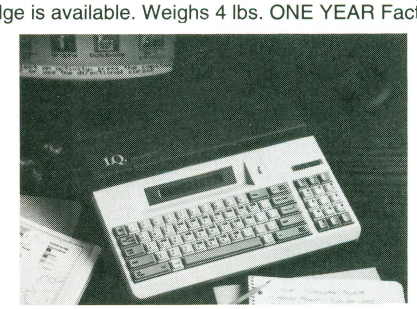
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# QUADRIGA

## To Be AppleWorks 4.0



In the last issue of *II Alive,* we featured a story on a new AppleWorks upgrade, code-named Quadriga, being prepared by veteran AppleWorks programmers Randy Brandt and Dan Verkade. The upgrade was to be published by Quality Computers and released independently of Claris, the current publisher of AppleWorks.

At press time, the product was entering the beta-testing phase, where the last remaining bugs will be exterminated and a few new features may be added. Brandt and Quality Computers president Joe Gleason report that the Quadriga project is still on schedule and that they expect to hit the promised release date of October 1.

Gleason also reports that Quality's negotiations with Claris, which have actually been going on since late last spring, have finally borne fruit. "It was extremely frustrating not to be able to mention it in last issue's piece," says Gleason, "but protocol demanded that we keep a lid on things until we had a contract. The rumor mill was our worst enemy. The secrecy was vital for Claris to see that we were, in fact, making a serious offer. If they thought we were not trustworthy for some reason, the deal wouldn't have even made it off the ground."

Now negotiations are nearing completion, and the world can finally be told. "Quality Computers and Claris have signed a letter of intent to make Quality Computers the new publisher of AppleWorks and AppleWorks GS," says Gleason. The letter of intent, he explains, simply means that both parties have agreed to proceed and are merely negotiating the details of the full contract. "We expect to sign the actual contract by the end of August," Gleason reports.

The contract will include rights to the AppleWorks and AppleWorks GS names, which are actually Apple trademarks licensed to Claris. Quadriga, then, will be released as AppleWorks 4.0. "It was what we were hoping for all along," says Gleason, "and, to be honest, the fact that we were already working on the upgrade was one of the things that convinced Claris we were serious."

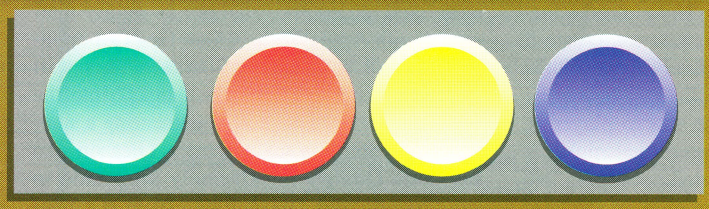
With version 4.0, AppleWorks becomes the easiest-to-use, most functional, and most flexible integrated package on the market—for any computer. "Users just want to get their work done," says Brandt. "AppleWorks has always been the fastest way to do real work on a computer. And AppleWorks 4.0 gives you literally all the tools you need, right at your fingertips. Even tools for making tools. If you need a feature that we didn't think of, you can create it with UltraMacros, and then every AppleWorks user can take advantage of it."

AppleWorks 4.0's built-in macro player is, in Brandt's opinion, the feature that makes it stand out from other integrated packages. "No other integrated package, not even on the Mac or the PC, has the flexibility of a real programming language. And UltraMacros programming is exceptionally easy to learn. I've watched even non-programmers write useful macros less than an hour after opening the package." Word is that the most prolific macro publishers, including Marin MacroWorks and Kingwood Micro Software, are gearing up for more interest in their products in October.

Quality Computers also plans an AppleWorks GS upgrade in the months ahead. In addition to fixing the product's current pitfalls, Gleason wants to make the program more open-ended. "We want to make it possible to write desk accessories that are as tightly integrated with AppleWorks GS as TimeOut applications are with AppleWorks." This will involve giving programmers "hooks" into the AppleWorks GS code and documenting a standard for writing such accessories. Gleason also says that Quality is extremely interested in suggestions and "wish lists" from the program's current users.

Quality Computers is currently accepting orders for AppleWorks 4.0 upgrades. Upgrades from AppleWorks 3.0 are $79; upgrades from previous versions are $99. Quality offers a 30-day money-back satisfaction guarantee on the upgrade, and orders placed before October 1 also include a free "Enhancing AppleWorks" video. Gleason also expects to sell AppleWorks 4.0 as a stand-alone package for about $169 beginning in October. No release date or price is yet set for the AppleWorks GS upgrade. ■





# Data Compression

by Dan Brown

# Head To Head:

## AutoArk vs. HardPressed

The last year or so has seen something of a revival for the Apple IIGS. New software seems to be sprouting up all over the place, in some cases even creating sudden competition in a field that hasn't seen much before. For example, everyone said a IIGS MultiFinder was a technical impossibility—now there are not one but two commercial programs that allow IIGS owners to run more than one IIgs program. Similarly, two hard drive compression utilities—Econ Technologies' *AutoArk* and WestCode's *HardPressed*—recently appeared on the market. While both products claim the same basic features of transparently compressing information on your hard drive and thereby increasing the amount of data you can store on it, *HardPressed* has more bells and whistles.

Both programs achieve their transparency by hooking into GS/OS. When you open a compressed file with either *AutoArk* or *HardPressed,* the file is de-compressed "on the fly" and the de-compressed data is returned to the application. Your programs never know they're working with compressed files. (See sidebar for more information on how data compression works.) Unfortunately, neither company has developed a way to make this magic work within ProDOS 8 applications; both *HardPressed* and *AutoArk* only function within 16-bit GS/OS software.

*AutoArk* has been available since December 1992, but *HardPressed* is much newer—it's only been shipping since mid-June, 1993. WestCode, in fact, planned to send us a review copy of *HardPressed* in time for us to review it for the July/August issue, but missed the deadline by less than a week. These delays led some writers to speculate that *HardPressed* had been cancelled. This rumor, thankfully, is clearly false—the evidence finally arrived here late in June.

### All Aboard The AutoArk

*AutoArk* consists of a Finder Extension which adds several items to the Finder's Extras menu and two items to the Apple menu. In the Finder, a user may compress, expand, encrypt, or decrypt selected files, get compression statistics on any file or group of files, and change the *AutoArk* settings, all from the Extras menu.

*AutoArk* also adds two items to the Apple menu, "AA Compress File" and "AA Expand File." As the names suggest, these two items allow the user to compress and expand files within an application, without requiring a return to the Finder for these operations.

The *AutoArk* configuration screen includes seven options. You may enable or disable the Finder interface, enable or disable temporary files for compression, enable or disable data verification, and enable or disable application dialogs. You may also assign key equivalents and compressors, or view the credits.

The Finder interface determines how you will deal with *AutoArk* in the Finder. With the Finder interface enabled, compressed files will have a special icon—two "A"s superimposed on the usual icon—and the *AutoArk* functions will appear on the Finder's Extras menu. With the Finder interface disabled, files will retain their original icons, and only the configuration option will remain in the Extras menu.

Temporary files and data verification both relate to the safety of your data while *AutoArk* is working with it. When temporary files are enabled, compressing a file reads the original file, writes a compressed version to a temporary file, deletes the original file, and renames the temporary file to the original filename. With temporary files disabled, the file is read into memory and the compressed file is written over the original file. This saves a little time—at the slight risk of losing the data if the computer happens to crash during the operation.

Data verification, if enabled, causes *AutoArk* to de-compress the compressed file after compression and compare it to the original, warning you if the data in the compressed file does not match the original data. Data verification, like temporary files, also results in a slight speed penalty.

Using *AutoArk* is very simple—just select a file or group of files, then choose "Compress..." from the Extras menu. Your selection may include folders, in which case the contents of the folder, and any folders it contains, will be compressed. You may also select files to compress via the "AA Compress File" desk accessory. You may encrypt files by selecting "Encrypt..." from the Extras menu. (Attempting to open an encrypted file will produce a dialog box asking for the encryption key; if you don't have the password, you will be unable to open the file.)

Working with compressed files requires no modifications to the way you normally work. Simply open your applications and files in the normal fashion. *AutoArk* will transparently expand files as they're needed and re-compress them (if any changes were made) upon return to the Finder. New files you create, however, will need to be manually compressed.

If you later decide that you don't want some

### AUTOARK

by D. Proni
Published by Econ Technologies

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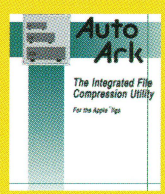
**Product Summary:** Integrated data compression utility.

**System Requirements:** Apple IIgs, System 6.0 or later, 1 Mb of RAM (2 or more recommended), 3.5" drive (hard drive recommended). Not copy-protected; hard drive installable.

**Retail price:** $49.95

**Capability:** 7
**Ease of use:** 8
**Documentation:** 6
**Innovation:** 7
**Compatibility:** 8

**Overall:** 7




### HARDPRESSED

by Andy McFadden
Published by WestCode Software

15050 Avenue of Science, Ste. 112
San Diego, CA 92128
(619) 487-9200

**Product Summary:** Integrated data compression utility.

**System Requirements:** Apple IIgs, System 6.0 or later, 1 Mb of RAM (2 or more recommended), 3.5" drive (hard drive recommended). Not copy-protected; hard drive installable.

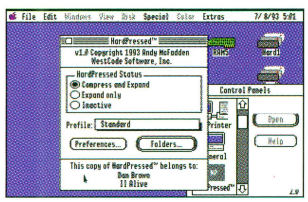
**Retail price:** $69.95

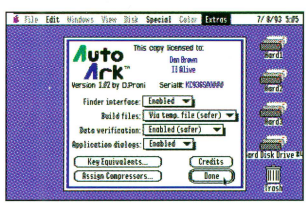
**Capability:** 8
**Ease of use:** 7
**Documentation:** 9
**Innovation:** 8
**Compatibility:** 8

**Overall:** 8



*. . . both AutoArk and HardPressed are excellent, stable pieces of software. HardPressed is much faster and is capable of better compression, but AutoArk is less expensive and offers encryption.*





of the files compressed, simply select the ones you want uncompressed and select "Expand. . ." from the Extras menu, or use the "AA Expand File" desk accessory.

A twenty-page manual is included with *AutoArk.* This manual describes the operation of the software in a clear and straightforward manner, and includes information on how to contact Econ for technical support. Operation of the program is so simple, however, that you likely won't need to do that.

## HardPressed to Buy A New Hard Drive

Like *AutoArk, HardPressed* includes a Finder Extension, but also comes with a Control Panel and a Classic Desk Accessory (CDA). The *HardPressed* Control Panel sets compression profiles, command-key equivalents, and other settings for *HardPressed.* The Finder Extension does the actual work of compressing and expanding files as necessary, and also adds commands to the Finder's Extras menu to compress and expand files. The CDA allows the user to temporarily turn *HardPressed* on or off at any time.

When accessing a compressed file, *HardPressed* normally expands files in memory, because it's faster and uses less disk space than expanding to disk. The Control Panel allows you to set the maximum amount of memory used for this "compression cache," and to specify where files should be stored when they overflow the cache. You may also change the keyboard commands for compressing and expanding files, as in *AutoArk.*

Also like *AutoArk, HardPressed* has an option to verify the compressed data after compression, though WestCode doesn't feel it is necessary to do so: "Our first reaction to a verify option was that if we thought it was necessary, we wouldn't sell the program. However, some people may not have the same faith in data compression as we do, so we provide a way to verify that the compressed copy is good before removing the uncompressed copy." As a footnote, they add, "There are also some people who still believe the Earth is flat. There may or may not be any correlation between the two groups."

While in theory, lossless data compression is always 100% reversible, in practice, programs sometimes have bugs. While we didn't encounter any bugs in *HardPressed* which caused us to lose data, that doesn't mean there aren't any lurking about, and any option which provides additional security is welcome. It's a bit pretentious of WestCode to make such a statement, and we suggest you leave the verification option turned on until you have proved to your own satisfaction that the program can be trusted with your precious files. (The same holds true of *AutoArk.*)

The Control Panel also provides access to an important *HardPressed* convenience feature—marking folders for compression. *HardPressed* allows you to select any number of folders to be automatically compressed. After you mark the desired folders, any files placed into them (with the Finder or from any other program—even saving a file from inside an application) will automatically be compressed by *HardPressed,* without any further intervention. (Unfortunately, marking a folder doesn't compress its current contents. After marking a folder, you must move the folder's contents to another disk, then copy them back into the folder before *HardPressed* will actually compress them.)

*HardPressed* may be told, via either the Control Panel or the CDA, to compress and expand files, to only expand files, or to be completely inactive. These settings may be changed at any time and are effective immediately, though settings made in the CDA disappear when the computer is restarted. The CDA can also be used to turn verification on or off. The advantage of the CDA is that it's accessi-

# DATA COMPRESSION BASICS

Most things humans do are filled with redundancy. For example, the English language is extremely redundant—as much as 70% of the data in this article could be removed, and it would still be understandable. (Start by removing vowels except when they are essential to comprehension; replace common but lengthy words with shorter equivalents. Sound familiar? Shorthand, as practiced by secretaries, is a simple form of English data compression commonly performed by humans.)

Other forms of data are also filled with redundancy. Take, for example, a simple black square drawn on a white screen. Instead of storing this graphic as a bitmap (that is, saving each dot as a separate byte in the file), we could simply store the corner coordinates and the color of the square, or use a compression method called Run Length Encoding, or RLE, which replaces large groups of repeated bytes (such as all the black bytes in the square) with a single count byte and the repeated byte. Using RLE, a byte sequence such as 7 7 7 7 7 could be stored instead as a count of 6 and a value of 7—two bytes instead of six.

There's a whole branch of computer science dedicated to studying and eliminating data redundancy, and computer scientists have come up with some general-purpose algorithms (techniques) which remove most redundancies from nearly any type of data. The first popular algorithm was called Huffman, after its inventor. Huffman's main drawbacks are that it doesn't work well with certain kinds of data, it requires a lengthy "dictionary" to be stored with compressed data (meaning it doesn't begin to pay off until you save more bytes than the dictionary adds), and it's extremely slow because it requires two passes through the file to encode it.

The current state-of-the-art is Lempel-Ziv encoding, invented by two researchers named Lempel and Ziv. (Another computer scientist named Welch added some refinements to the original L-Z algorithm, resulting in the popular LZW variation.) LZW is much faster than Huffman and is the compression method of choice for general-purpose archiving. Some new variants of LZW, including LZH (LZW combined with Huffman) and LZSS, show promise, but tend to be slow at encoding.

These compression techniques are all lossless—that is, when you unpack a file compressed with one of these algorithms, the de-compressed file will be identical to the original file. This is essential for files like program code and Englsih text. There are also "lossy" data compression techniques, which actually throw out some of the data. Lossy techniques are often used with graphics and sound, since the way humans perceive this type of data permits some loss of detail. The new digital audio formats (Mini-Disc and Digital Compact Casette or DCC) both use lossy compression at about a 5:1 ratio, and a standard image compression format, JPEG, can reduce graphics file size by an order of maginitude with no visible loss.

If data compression is so great, why are files stored with redundancy at all? Why doesn't every program save files in a compressed format? The answer is simple—time. People don't want to wait too long for their files to load and save, and compression requires a lot of CPU time. This is why, until recently, most people used data compression only for archival purposes (i.e., when making backups or when transmitting files via modem). However, recent advances in compression software have made so-called "transparent" data compression—where programs read and write data in their normal format and an add-on module handles the compression and de-compression—more feasible.

The Apple II has some built-in compression techniques. For example, Applesoft BASIC "tokenizes" program lines as they're typed in, replacing long words like PRINT with single-byte tokens. (This was extremely important in the old days, when most people had 48K RAM or less!) The IIgs has a form of RLE (called PackBytes—it's used with Apple Preferred Format graphics) in its Toolbox, and a form of lossy compression (ACE) for use with sound.

ble even in programs that don't have easy access to the Apple menu—such as Merlin 16, ProSel 16, and the ORCA command line.

*HardPressed* works transparently in exactly the same way as *AutoArk,* automatically expanding files as they're needed. Unlike *AutoArk,* however, *HardPressed* won't wait for you to return to the Finder to re-compress changed files—they're compressed as they're saved. Additionally, any new files saved to a marked folder are also compressed.

*HardPressed* has a unique feature called "compression profiles." *HardPressed* ships with four "intelligent profiles," which assign different compression algorithms to different types of files. (Different algorithms are better suited to different kinds of data.) In addition, five profiles are included which compress all files with a particular type of compression. For instance, "All: LZW" will compress all files with LZW compression (LZW, or Lempel-Ziv-Welch, is a good general-purpose method).

*HardPressed's* intelligent profiles will generally keep you from accidentally compressing anything that shouldn't be compressed—for instance, a ProDOS 8 application or an Applesoft BASIC program. However, only one of the intelligent profiles will compress Text or Binary files, which is a minor annoyance, since these files are not always ProDOS 8 documents. (*AutoArk,* on the other hand, will compress just about any file, so you need to be careful about which files you select if you ever use ProDOS 8 programs.) With either program, you can compress, say, your folder of AppleWorks 3.0 files, but you won't be able to use them in AppleWorks without manually decompressing them first.

About the only major oversights in *HardPressed,* are (as we mentioned above) the lack of a feature to compress existing files in marked folders, and the lack of a facility to edit the compression profiles. Programmer Andy McFadden says he's considering ways to implement these features in a future version.

WestCode's manual for *HardPressed* includes 90 pages. Included are a thorough explanation of software operation and an explanation of data compression in general. A troubleshooting guide is also included, as are a tutorial (using files on the *HardPressed* disk) and technical information on several forms of compression.

## BenchPressed

Of course, programs of this nature are less useful if the space saved isn't perceived as being more valuable than the time lost. In the speed contest, *HardPressed* is the clear winner—ranged from 1.5 to 2 times as fast as *AutoArk.* The question of compression ratio, however, is more difficult to answer because of *HardPressed's* selectable compression profiles. With the "All: LZW" profile, *HardPressed's* compression ratio is about the same as *AutoArk's,* but *HardPressed* is still at least twice as fast. (See Figure 1.)

With both *AutoArk* and *HardPressed,* you probably won't want to compress everything on your hard drive. In general, it's best to avoid compressing large, frequently-used applications. With *HardPressed,* you can relieve some of this frustration by setting the profile to "Slower, more compression" before compressing your applications. (Our AppleWorks GS text, for example, is something you probably wouldn't want to do under normal circumstances.) The type of compression (LZSS) used on applications with this profile takes a very long time to compress, but the compressed files expand even more quickly than usual. As a bonus, LZSS also provides the best compression ratio available. Switch back to a more conservative profile after compressing your applications so that data files can be saved and compressed in a reasonable amount of time.

Another way to reduce waiting times, though more expensive, is to purchase an accelerator such as the ZipGS (about $150), a high-speed hard drive controller like the RamFAST/SCSI card (about $170), or both. If you can only afford one, we suggest the accelerator, since the compression process is more CPU-intensive than disk-intensive. (See Figure 2.)

*AutoArk* originally had a few bugs, all of which were cleared up via two maintenance releases since the program's original release. It appears that another bug has surfaced with the release of System 6.0.1 for the IIGS, and Econ has released another version to correct it. (As of press time, however, we had not received the updated version.)

*HardPressed,* since it's a newer product, has a few small quirks of its own. There are reports of incompatibilities between *HardPressed* and Seven Hills' *Kangaroo,* and a few people have reported problems with HyperCard IIGS. WestCode and Seven Hills are attempting to fix the problem with *Kangaroo;* by the time you read this, the problem may be solved. *HardPressed* is also incompatible with most of the disk-intensive utilities of ProSel-16, according to the compatibility notes in the manual. (Use the CDA to turn off *HardPressed* temporarily while using ProSel-16's utilities.)

All in all, both *AutoArk* and *HardPressed* are excellent, stable pieces of software. *HardPressed* is much faster and is capable of better compression, but *AutoArk* is less expensive and offers encryption. Thanks to its comprehensive profile and folder-marking features, though, *HardPressed* gets the nod as the better of the two programs. ■

## AutoArk & HardPressed Benchmarks

*System statistics: Apple IIGS, ROM 03, 4 MB RAM, Quantum hard drive mechanism, Apple High Speed SCSI Card, System 6.0.1. HardPressed's RAM cache was set to 256K. All safety options in both programs (temporary files and verification) were active.*

**FIGURE 1**
AppleWorks GS Launch Test
(Normal IIGS Speed)

| | AutoArk | HardPressed Std. (LZW) | HardPressed Small (LZSS) |
|---|---|---|---|
| Compressed size | 593K | 617K | 500K |
| % of original size | 75% | 78% | 63% |
| Time to compress | 4:50 | 3:32 | 8:51 |
| Time to expand | 2:55 | 1:48 | 1:10 |
| Time to launch | 3:05 | 1:58 | 1:20 |
| % slower launch | 704% | 413% | 248% |

AppleWorks GS is 793K in uncompressed form and ordinarily takes 23 seconds to launch.

With HardPressed's RAM Cache set to 1024K, expansion of the compressed AWGS program file can take place entirely in memory. Times to launch AWGS with an 1024K cache were 1:50 (LZW) and 1:15 (LZSS).

**FIGURE 2**
Accelerated AWGS Tests
(Zip GS 8 MHz, 16k cache)

| | AutoArk | HardPressed Std. (LZW) | HardPressed Small (LZSS) |
|---|---|---|---|
| Time to compress | 2:15 | 1:27 | 3:52 |
| Time to expand | 1:25 | 0:47 | 0:44 |
| Time to launch | 1:35 | 0:57 | 0:54 |

With HardPressed's RAM Cache set to 1024K, times to launch AWGS were 0:55 (LZW) and 0:43 (LZSS).

**FIGURE 3**
Data Files Test
(Normal IIGS Speed)

| | AutoArk | HardPressed Std. (LZW) | HardPressed Small (LZSS) |
|---|---|---|---|
| Compressed size | 240K | 205K | 196K |
| % of original size | 47% | 40% | 38% |
| Time to compress | 3:32 | 2:29 | 8:05 |
| Time to expand | 2:46 | 1:45 | 1:28 |
| Average time to expand | 5.5 sec | 3.5 sec | 2.9 sec |

The original folder containing 30 data files (mixed AWGS files, text files, and graphics files) was 511K in size.




# Bargain Bonanza

**by Sheane Meikle**

*Be extremely wary if the computer system is all packed in boxes "ready to go" when you arrive, and insist that you be allowed to test the machine before spending any money.*



These days, it's becoming more and more apparent that Apple II users need to find alternative avenues to meet our computing needs. One of these routes is the used computer market.

Finding quality used computers at a reasonable price is not as hard as you might think. You just need to know what to look for and where to look. This article is an introduction to these sources, with enough information that even the most timid can feel confident about making the decision to "go used."

While the used computer market is a great source of deals, it's important to remember the old adage "You get what you pay for." If a deal seems too good to be true, well, it might still be true—the seller may have no idea what the computer is really worth or simply need cash in a hurry—but take basic precautions to protect yourself. This includes using credit cards or C.O.D. shipping, getting a written warranty when possible, and exercising your common sense.

## Used Computer Dealers

Used computer dealers are the most reliable source for the systems and components you need, since they generally provide warranties and have in-house technicians who can return abused equipment to running order. Also, when a manufacturer liquidates stock on a product, these dealers are often able to pick up the surplus and offer it to the public at a fantastic price. Here are five dealers who deal extensively with Apple II computers and equipment. (Most also carry Macintosh peripherals, many of which can be used with the Apple II.)

Sun Remarketing (Logan, UT) is one of the oldest and largest used computer dealers. They have a very good selection of used Apple II computers at reasonable prices. However, their sales staff is not very knowledgeable about the Apple II, so you should know what you need before you call. Sun had some excellent deals on at the time this article was written, including as a StyleWriter printer for $229 or an 800K 3.5 drive for $99. All products carry a 30 day money-back guarantee.

Pre-Owned Electronics (Bedford, MA), in addition to being a used computer dealer, is probably the largest Apple repair center in the Western Hemisphere. They've earned a reputation for restoring merchandise to a like-new condition, and when you ship them an item for repair, they replace it with a prerepaired item—thus reducing your down time. Their staff is very friendly and knowledgeable, but their catalog lacks prices, and getting a price list on used components can be quite an accomplishment. When I did get a price list for their exchange program, I found some decent deals, but watch closely—on some items, you can buy it elsewhere used for less than you can get it replaced at Pre-Owned.

Shreve Systems (Shreveport, LA) has a reputation for providing excellent customer service, as well as first-rate products. If you are trying to locate the best price on an item, or looking for a rare find, Shreve Systems can be of assistance. Although Shreve Systems does have an 800 number, it's only good within the continental United States—a fact they seem to forget in their advertisements. Shreve Systems usually has the IIe-to-IIGS upgrade in stock, and recently featured the Apple Video Overlay Card for $69 and the Apple High-Speed SCSI card for $89.

MP Computer Micro Systems (Mountain View, CA) is one of the smallest used Apple II dealers, but they are also one of the friendliest. When I called to check their prices, they went out of their way to help, even going so far as to beat a larger dealer's prices to try to win me as a customer. MP Computers unfortunately has neither a catalog nor an 800 number, which can really run up your phone bill when shopping around for the best price. When I called, they had the Apple Video Overlay card for $65 and the Transwarp GS for $149.

Alltech Electronics Company (Oceanside, CA) is a unique used Apple II company. Their technical department is outstanding. When they can't find an item a customer needs, they often modify or retrofit another item to take its place. Recently, for example, they modified a batch of Atari RGB monitors to work on the IIGS and are selling them for over a hundred dollars less than other companies' IIGS monitors. They've also been experimenting with putting an Apple IIGS into a "luggable" case with monitor (the prototype can be seen in the *II Alive* "Apple II Review" video). The sales department is not quite so praiseworthy—recently I called *three times* to check on an advertised item, and the sales staff hadn't even heard of it. Each time they promised to check on it and call me back, but I still haven't heard anything from them. Don't let this discourage you, though. Alltech does have some great products at low prices—like Koala pads for $29, 1 MB SIMMs for $24, and 5.25" floppy drives for $59. If you know what you want before ordering, and the sales department is familiar with it, you shouldn't have any difficulty.

## The Classifieds

Classified ads are at once the riskiest and the most rewarding place to find a computer system at an incredible price. Because you cut out the middleman,

you can often negotiate a price that's lower than a dealer would charge but more than a dealer would pay—obviously beneficial to both parties. However, you do need to know what you're looking for before you start, otherwise you can spend large sums of money on equipment that simply won't perform the way you thought it would.

Classified ads in Apple II magazines may yield good deals, but people do have a tendency to become emotionally attached to their systems and, thus, to overcharge. A good starting price for a decked-out IIGS with Apple RGB monitor, an accelerator card, two 3.5" drives, expanded memory, and miscellaneous goodies is $700 or so. (When totaling up the other components of the system, figure $50-$100 for each peripheral card or disk drive, $150-$200 for a printer or a hard drive, and $5-$10 for each software title.)

If you're really savvy, you can often find Apple-compatible peripherals in Macintosh, Amiga, and even Atari ST magazines. (Macintosh peripherals are popular with Amiga and Atari users because these computers have low-cost Macintosh emulators available). If you're looking for a SCSI hard drive mechanism, or a printer, check out *all* the magazines' classifieds; you never know where you'll find what you're looking for.

Newspaper classified ads are another excellent resource when shopping for a used Apple II computer, especially a complete system. Since they're in your local paper, you have a chance to try out the equipment before you buy it. You're much more likely to find incredible deals in newspaper classifieds than in computer magazines because the people selling the equipment often don't realize its true value. I recently purchased a Macintosh 128 with an ImageWriter II and a 20 MB serial hard drive for $100. The printer alone is worth that much, and the Mac 128 makes an excellent paperweight or flower vase—or I could probably turn around and sell it for $50-$100 with the hard drive.

Don't limit yourself to just the "Used Computers" heading—some of the best deals can be found under the "Miscellaneous" heading. This is where people tend to advertise the junk they couldn't sell at their garage sale. Sometimes, tucked away between the ads for used porta-potties and rusty nails, you'll find used Apple II systems at ridiculously low prices.

If you have a modem, your local computer bulletin board (or a national service, like GEnie, CompuServe, and America Online) is also a good place to search out deals. Many BBSs and online services have a "Classified Ads" service. Since many of the people you'll meet online are veteran computer users, they'll probably know what their equipment is really worth, but on the whole you'll usually find the prices to be extremely fair. Also, you can post a message asking if anyone has the particular item you're looking for—pulling the sellers to you, instead of having to search them out yourself.

## Other Sources

Apple dealers sometimes have used systems for sale—floor models, rentals, or systems taken in on trade for a newer system. Even if a dealer doesn't actually deal in used systems, they may still know of someone who recently purchased a Macintosh system from them and has a used Apple II system for sale.

Most users groups have a monthly newsletter that contains classified ads, and the club members themselves can be a great resource. Many clubs have members who make a hobby out of "wheeling and dealing" all sorts of used equipment. Some clubs also sponsor "swap meets" or computer flea markets. At the very least, someone at a meeting may know of someone wishing to sell the item you're looking for.

Used computer brokerage is an option I don't really know very much about, so I can speak neither for nor against it. It works like this. The seller lists the items they wish to sell with a broker, and the buyer calls the broker looking for an item. If the broker has a listing for the item you want, you pay the broker. The seller ships the item directly to you, and if the product is satisfactory, the broker forwards your money (minus a commission) to the seller. If this sounds like it has possibilities, try the Boston Computer Exchange, one of the largest brokerage firms in existence.

If you are at all technically inclined, you can also "roll your own" peripherals from existing products or parts. Rolling your own equipment can be as simple as making your own 1.44 Meg drive by taking a used internal Macintosh floppy drive and mounting it in a case (saving almost $200 off the list price of a new Apple SuperDrive) or as difficult as building your own laser printer from used and surplus parts. If you've got the time and the skill, there's virtually no limit to what you can create at rock-bottom prices.

## Making The Purchase

Before shelling out a couple hundred bucks for a used computer, naturally you want some assurance that it works as advertised. You generally don't need to worry if you purchased your system from a used computer dealer, since they test their merchandise before selling it, and most dealers offer a warranty of some sort.

But when purchasing from other sources, it's important to test the system or components thoroughly before you buy, if at all possible. Be extremely wary if the computer system is all packed in boxes "ready to go" when you arrive, and insist that you be allowed to test the machine before spending any money. If the seller gives you some lame excuse, like "The darn printer cable's fried," buy the cable if necessary and make sure that's the problem. You could save hundreds of dollars with that $14 cable. Boot up the computer system with your favorite software, save some files, and print out some graphics. Also check for physical damage and abuse, as these can indicate how well the system was treated.

If the merchandise passes your inspection, check to make sure you're not dealing with stolen equipment. If the computer or components have missing serial numbers the computer *may* be stolen (this is not always the case, as some manufacturers sell off their surplus discontinued merchandise without a serial number to avoid a warranty). If a computer system has all the serial numbers intact, you may want to check with local authorities just to reassure yourself that none of the items appear on the local "hot" lists.

If a personal inspection is not possible (for example, if you're buying from a classified ad in a national magazine or from someone on an online service), try to get at least a verbal assurance that you can return the equipment if it turns out to be defective (a written guarantee is even better). For transactions over $50 or so, insist on C.O.D. delivery—especially if you don't know the seller personally—to ensure that you at least get something for your money.

With a little patience and some creativity, finding a used Apple II system that meets your needs can be fun and inexpensive. Good luck! ■

## SOURCES

**Sun Remarketing**
P.O. Box 4059
Logan, UT 84323
(801) 755-3360
(800) 821-3221
(900) 786-7782 tech
(801) 755-3311 fax

**Pre-Owned Electronics**
205 Burlington Rd.
Bedford, MA 01730
(617) 275-4600
(800) 274-5343
(617) 275-4848 fax

**Shreve Systems**
1200 Marshall St.
Shreveport, LA 71101
(318) 424-9791
(800) 227-3971
(318) 424-7987 tech
(318) 424-9771 fax

**MP Computer Micro Systems**
655 W. Evelyn Ave #2
Mountain View, CA 94041
(415) 960-1514
(415) 968-0509 fax

**Alltech Electronics**
602 Garrison St.
Oceanside, CA 92054
(619) 721-7733
(800) 955-7773
(619) 721-2823 fax

**Boston Computer Exchange**
P.O. Box 1177
Boston, MA 02103
(617) 542-4414
(800) 262-6399 U.S.
(800) 437-2470 Canada
(617) 542-2345 fax

In researching this article, I discovered that there is no central source of used third-party (non-Apple) hardware, or used Apple II software. If this market exists, I have decided to try to service it. If you are looking for used Apple II software or third-party hardware (or have some to sell), give me a call. Perhaps I can be of some assistance.

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# CRASH AND BURN PART 1

by Nathaniel Sloan

You know the feeling. You're sitting at your computer, typing up your latest letter to Apple Computer, when, suddenly, an unexpected message pops up. An error has occurred. Maybe even a fatal error. You check your manuals to find out what all the commotion is about, but there's nothing listed for your particular error. What can you do? Have you lost all your work? You experience that familiar sinking feeling as you reach for Apple-Control-Reset one more time.

But rebooting the machine without understanding what went wrong doesn't solve the problem, and it may not even be necessary. Error messages don't always mean you've lost your work. Many are recoverable—that is, you can correct them without losing your data. Error messages are a normal part of everyday computing, and they are intended to inform you, not cause cardiac arrest. The only trouble is that some error messages are seemingly deliberately written to be confusing. Extra Ignored? Error $27? 0911? Don't panic!

Even if your computer says "Fatal Error," it doesn't necessarily mean that your computer's going to die. While a fatal error can be caused by a serious hardware problem, it might also be caused by a program bug, a software incompatibility, or the phase of the moon (that is, something entirely out of your control, like a power surge). A fatal error simply means that the program has encountered a problem too serious to allow it to continue running—a reboot will usually bring things back to normal. Most programs are designed to "trap" errors and handle them "gracefully"—that is, with a minimum of hassle and data loss—so fatal errors should be rare. In fact, you may not even be aware of many of the errors your computer encounters because programs know how to handle them without even having to ask.

## Why Errors Occur

Not all programs are as well-written as we like to believe. This is the most frequent reason for receiving an error code—programmer IQ error. A well-written program has instructions that tell the computer what to do to recover from every possible error. Sometimes a programmer gets lazy and says, "oh, that'll never happen" and doesn't include program code to handle some of the errors—or to handle the errors by simply printing a cryptic error number on the screen. Sometimes the program just hasn't been tested thoroughly and contains bugs. A familiarity with Applesoft and ProDOS error codes will stand you in good stead in most of these situations.

However, it's possible that there's something more serious wrong with your system, especially if you have an Apple IIGS. The IIGS System Software has many interrelated components—and you can add your own components, too, like desk accessories, fonts, and Control Panels. All of these components must be compatible with each other, and free of bugs, for things to work right. System Software conflicts can be difficult to track down because their consequences can seem completely unrelated to the actual source of the problem. Actual hardware problems, though rare, can also rear their ugly head with similar symptoms.

Finally, we must admit to the worst possibility—that one of your disks has somehow been damaged and the computer can't read it anymore. In this case, an error message is wholly appropriate—the computer literally can't do what you told it to do. The best remedy for a disk error is having a backup; failing that, we'll discuss programs that can help recover your data.

## Recognizing Errors

Sometimes the source of an error message is obvious. If the computer beeps, displays an error message, and gives you an Applesoft prompt (the right bracket, ]), then you have encountered an Applesoft or BASIC.System error. (We'll be covering each type of error in more depth later.) Applesoft error messages begin with a question mark. BASIC.System error messages are generally short phrases (such as PATH NOT FOUND) followed by a BREAK IN X message (the X is a number).

If a program gives you a two-digit error code (such as $27), you're probably looking at a ProDOS error code. If you have a IIgs, and get a four-digit error code, it's likely to be a GS/OS or toolbox error. (GS/OS errors have $00 as their first two digits; the last two digits are the same as a ProDOS error code. Toolbox errors have something besides $00 as their first two digits.) Most ProDOS and GS/OS errors indicate a problem with the disk or disk drive you're using, though other things can also trigger them.

GS/OS and ProDOS can also give you Fatal System Errors when they encounter a situation which simply does not permit the program to continue running. The GS/OS rendition can be recognized by a sliding Apple that bounces across the screen. ProDOS simply says "ERR xx RESTART SYSTEM" at the bottom of the screen (just "ERR xx" in some cases)

If your computer suddenly "locks up" (stops responding to keypresses and mouse movement) you may have encountered that most

**FIGURE 1: A Crash To The Monitor**

```
Non-IIgs Apple IIs:
4EA4: A=42 X=71 Y=AF S=D8 P=11
*

Apple IIgs:
04/4EA2: 00 00 BRK 00
A=0110 X=0014 Y=00AF S=13F0 D=0800 P=10 B=09 K=04 M=0C Q=80 L=1 m=0 x=1 e=0
*
```

**FIGURE 2: Applesoft BASIC Error Messages**

| Code | Message |
|---|---|
| 0 | Next Without For |
| 16 | Syntax Error |
| 22 | Return Without Gosub |
| 42 | Out Of Data |
| 53 | Illegal Quantity |
| 69 | Overflow |
| 77 | Out Of Memory |
| 90 | Undefined Statement |
| 107 | Bad Subscript |
| 120 | Redimensioned Array |
| 133 | Division By Zero |
| 149 | Illegal Direct |
| 163 | Type Mismatch |
| 176 | String Too Long |
| 191 | Formula Too Complex |
| 210 | Can't Continue |
| 224 | Undefined Function |

insidious of errors, the "hang." Since there's no error message and the computer is unable to respond to your keystrokes, your only choice is to restart, often without any idea what went wrong. However, there are some things you can do to prevent a recurrence.

Finally, there's the infamous "crash to the Monitor." The computer beeps and you're greeted with a prompt that looks like Figure 1. The asterisk (*) will be followed by a flashing cursor. You're in the Apple II Monitor. The Monitor (not related to the monitor that displays the computer's output) is a program built into the Apple II that lets programmers and knowledgeable users inspect and modify the contents of the computer's memory. The computer puts you there only when it can't figure out what else to do. Usually you only get a crash to the Monitor when there's a serious bug in the program you're using, but it can also be caused by System Software conflicts or a hardware problem.

If a program is displaying graphics, sometimes error messages can be concealed. For example, if a IIGS Desktop program crashes into the Monitor, you'll hear a beep, but nothing will be displayed on the graphics screen (the error message and the prompt are displayed on the text screen, which is hidden "behind" the graphics screen). The mouse pointer may even continue to move, but none of the menus will pull down. Before you assume that the computer has frozen, try typing Control-T followed by Return (on a IIe or IIc, type C051 followed by Return). If that reveals nothing, try typing TEXT followed by Return (this is an Applesoft BASIC command). If the program has actually crashed in some way, this may reveal an error message.

## Applesoft BASIC Error Messages

Applesoft BASIC is a programming language built into most Apple II computers, and programs written in this language are everywhere. Even if you don't write your own BASIC programs, it's important to be able to recognize Applesoft error messages so you know which ones can be dealt with and which ones can't.

All Applesoft error messages begin with a question mark. Figure 2 contains a listing of "fatal" Applesoft error messages. If you get one of these messages while running a BASIC program, it usually means that the program has a bug—often a simple typo in the case of a Syntax Error, or a more serious logic error in the case of a Next Without For or such like. If you know a little about Applesoft programming, you may be able to fix these problems (a line number is usually given to help you begin your search).

Applesoft gives programmers the capability of "trapping" errors that would usually cause the program to stop running. A running program obviously can't fix logic errors in its own code, so usually the error-trapping logic within the program handles the errors it can (such as BASIC.System errors, below) and displays error numbers for those it can't. (If two numbers are displayed, the first is usually the error number and the second is usually the line number the error occurred in.)

Non-fatal Applesoft error messages include "Extra Ignored" and "Break." "Extra Ignored" means that you have typed a comma in your response to an Applesoft INPUT statement. For example, suppose a program asks you for your name. You enter "Bond, James Bond." The program responds with "Extra Ignored," accepting everything before the comma ("Bond" in our example) and ignoring everything after it; when the program later displays your name, it will only show "Bond." The computer has ignored the extra data after the comma. The program continues running. Better programs avoid using the INPUT command and use techniques which accept commas.

"Break" usually means that you have pressed Control-C, though it can also mean the programmer included a STOP command in the program (possibly a leftover from when the program was being tested). If you interrupted a program with an accidental press of Control-C, you can often resume the program by typing CONT followed by Return.

*Even if your computer says "Fatal Error," it doesn't necessarily mean that your computer's going to die . . . a fatal error simply means that the program has encountered a problem too serious to allow it to continue running—a reboot will usually bring things back to normal.*

**FIGURE 3: BASIC.System Error Messages**

| Code | Message | ProDOS Error Code(s) |
|---|---|---|
| 2 | Range Error | |
| | *Some of the parameters in the command have improper values. Usually a program bug.* | |
| 3 | No Device Connected | $28 |
| 4 | Write Protected | $2B |
| 5 | End of Data | $4C |
| 6 | Path not Found | $44, $45, $46 |
| 8 | I/O Error | $27, $4A, $4B, $51, $52, $5A |
| 9 | Disk Full | $48 |
| 10 | File Locked | $4E |
| 11 | Invalid Parameter | |
| | *A parameter used on the command is not supported by the command. Usually a program bug.* | |
| 12 | No Buffers Available | $42, $56 |
| 13 | File Type Mismatch | |
| 14 | Program Too Large | |
| 15 | Not Direct Command | |
| | *This BASIC.System command can only be used in programs, not directly from the keyboard.* | |
| 16 | Syntax Error | $40 |
| | *Unknown command or improper pathname. Possibly a progrram bug.* | |
| 17 | Directory Full | $49 |
| 18 | File Not Open | $43 |
| 19 | Duplicate File Name | $47 |
| 20 | File Busy | $50 |
| 21 | File(s) Still Open | |
| | *The program left some files open when it ended. Type CLOSE immediately to prevent data loss.* | |

**FIGURE 4: ProDOS Error Messages**

| Code | Message & Explanation |
|---|---|
| $01 | Invalid MLI Function<br>*You should rarely see this error. It indicates that a program is making an improper call to ProDOS. This would usually be considered a bug in the program.* |
| $04 | Incorrect Parameter Count<br>*See explanation for error $01.* |
| $25 | ProDOS Interrupt Table Full<br>*This error indicates that you are using too many programs that use interrupts at once. You should rarely see this error.* |
| $27 | Media I/O Error<br>*ProDOS was unable to read or write a block on the disk. Usually indicates a bad disk or a defective disk drive.* |
| $28 | No Device Connected<br>*An appropriate peripheral card was not found in the specified slot.* |
| $2B | Disk Write-Protected<br>*Remove the write-protect tab on a 5.25" disk (or close the write-protect window on a 3.5" disk) and try again.* |
| $2E | Disk Switched<br>*You have removed a disk for which there is an open file and replaced it with another disk. Some blocks on the new disk may have been overwritten before this was noticed.* |
| $40 | Invalid Pathname Syntax<br>*ProDOS disk, directory, and file names must start with a letter, and can contain up to 15 letters, numbers, and periods. Pathnames must use slashes to separate directories, and each name in the path must be a valid ProDOS name.* |
| $42 | Too Many Files Open<br>*You should rarely see this error. ProDOS supports up to 8 files open at once; the program has exceeded this limit—likely due to a program bug.* |
| $43 | Invalid Reference Number<br>*You should rarely see this error. The file reference number passed to the MLI does not denote an open file—likely due to a program bug.* |
| $44 | Subdirectory Not Found<br>*The pathname supplied could not be followed to the final directory. One or more subdirectories in the pathname do not exist (or are misspelled).* |
| $45 | Volume Not Found<br>*The volume name supplied is not in any drive (or is misspelled).* |
| $46 | File Not Found<br>*The file indicated by the last name in the pathname is not in the directory (or is misspelled).* |
| $47 | Duplicate Filename<br>*You h]e attempted to create or rename a file with a name that already exists. Each file in a directory must have a unique name.* |
| $48 | Disk Full<br>*No more unused blocks on the disk.* |
| $49 | Directory Full<br>*The main directory of a ProDOS disk can hold at most 51 files. You have attempted to exceed this limit. (Subdirectories have no limit.)* |
| $4A | Incompatible ProDOS Version<br>*The file was created by a version of ProDOS which is incompatible with the version you are using. You should never get this error since all versions of Pro DOS are compatible.* |
| $4B | Incompatible Storage Type<br>*The file was probably created by a GS/OS program and contains a resource fork. ProDOS 8 cannot access files with resource forks.* |
| $4C | End of Data<br>*The program has attempted to read more data from a file than exists in the file. This may happen due to a bug in the program or simply because the file does not contain data that the program can read.* |
| $4D | Past End Of File<br>*An attempt has been made to move the "position-in-file" pointer past the end of the file. You should rarely see this error; it usually indicates a program bug.* |
| $4E | Access Error<br>*The operation is not permitted on the file because of its access privileges. This can occur when you try to rename or delete a locked file.* |
| $50 | File Busy<br>*An attempt was made to delete, rename, or open a file which is already open. You should rarely see this error; it usually indicates a program bug.* |
| $51 | Invalid File Count<br>*The number of files in the directory is different from the number stated in the directory's header. This indicates a minor "soft error" on the disk which can be corrected by most disk repair programs.* |
| $52 | Not A ProDOS Disk<br>*The disk's blocks could be read, but no ProDOS directory could be found on it.* |
| $53 | Invalid Parameter<br>*See explanation for error $01.* |
| $55 | Too Many Volumes<br>*You should rarely see this error. It only occurs in a very specific circumstance (you have files open on eight different disks and ask for the name of the disk in a ninthdrive).* |
| $56 | Memory Protected<br>*The memory requested cannot be used because it is protected. You should rarely see this error; it usually indicates a bug in the program.* |
| $57 | DuplicateVolume<br>*Two disks known to ProDOS have the same name. This can cause confusion since ProDOS specifies disks by name, not by slot and drive numbers.* |
| $5A | Volume Bit Map Damaged<br>*A block numbered higher than the number of blocks on the disk is marked as free in the volume bit map. This may indicate that your entire volume bit map is trashed or may be a minor problem. Most disk repair utilities can fix this.* |

## BASIC.System Error Messages

When running Applesoft programs, disk access is handled by a program called BASIC.System. Applesoft, being 1970s technology, doesn't know anything about disk drives. And ProDOS, the Apple II disk operating system, doesn't know anything about Applesoft BASIC programs. BASIC.System serves as a sort of software "messenger" that accepts commands like LOAD and CATALOG from Applesoft programs and translates them into a format that ProDOS can handle.

This distinction is important. When running Applesoft programs, it's important to remember that any disk error messages you see come from not Applesoft, and not ProDOS, but BASIC.System. BASIC.System translates the ProDOS error codes (Figure 4) into a much smaller set of BASIC.System error codes (Figure 3) before passing them on to you. Notice, for example, that three different ProDOS errors are translated into the single BASIC.System error, Path Not Found. The error numbers are changed, too. (This was done to make BASIC.System "look" more like DOS 3.3, an older operating system, so it would be easier to move DOS 3.3 programs to ProDOS.)

As with Applesoft errors, BASIC.System errors can be "trapped" by the running Applesoft program. If the trapping feature is not used by the program you're running, you'll see a message like "Path Not Found," followed by "Break in X" (where X is the line number where the error occurred) and an Applesoft prompt (]). If the program you're running is trying to handle BASIC.System errors by itself, it may display an error number (listed in Figure 3).

Figure 3 also contains the ProDOS error codes which are equivalent to each BASIC.System error message. For example, when you see a Path Not Found error (or see an error number 6), you can translate that to ProDOS error $44, $45, or $46, as appropriate, and react accordingly. Since BASIC.System isn't as precise as ProDOS, you may have to check a few more things (is the right disk in the drive? did you misspell the file's name?) but you should be able to discover the problem and correct it.

Recovery from BASIC.System errors is usually handled by the BASIC program you're running, assuming that it traps errors. (Short programs often don't contain any error trapping; with such programs, just correct the problem and type RUN to restart the program.)

The most confusing BASIC.System error message is undoubtedly "No Buffers Available." Scores of Applesoft hackers have asked "What can I do to get more buffers?" The answer is "Nothing." This highly misleading message should really be called "Memory Protected" or something of the sort, as it usually only occurs when you are trying to load data into an area which has been marked as protected. (ProDOS has a facility for protecting sensitive memory areas from accidental clobbering. For example, you can't load a file on top of BASIC.System itself or in the "system" area at memory locations 0-511.) Only rarely is BASIC.System really unable to allocate more file buffers. If you receive a "No Buffers Available" message, try running BASIC.System and your program again; if that doesn't work, try a complete restart. If you still receive the error, you are likely the victim of some kind of bug in the program you're using.

## ProDOS and GS/OS Error Messages

Most application programs (for example, AppleWorks) will shield you from ProDOS error codes and translate them into plain English for you (for example, DISK NOT FOUND). However, even the best programs don't always handle every single ProDOS error, and many lesser programs display every error message as a number. Some programs display error messages in both formats so that the technically savvy will have a better idea of what's really going on inside their machines.

Unlike BASIC.System errors, ProDOS has error codes for very specific problems. There are five separate codes which may indicate that a disk is damaged in some way, for example. ($27, $4A, $4B, $51, and $5A—see Figure 4.)

The most serious ProDOS error—and the one which strikes the most fear into the hearts of users—is error $27. This error means that a block on your disk is literally unreadable, and may have been physically damaged, erased by a stray magnetic field, or possibly just fallen victim to a defective floppy disk. If this error comes up while launching an application, your program disk is probably damaged. If it appears while loading or opening a data file within an application, it means that it's probably time to pull out your backup copy of your data file (of course you have one). If it appears while saving a file, you can usually recover by saving onto a different disk.

The other ProDOS "disk damaged" errors are "soft errors." They mean that ProDOS can read the disk's blocks all right, but it can't make any sense of what it finds there. Usually, this kind of data corruption is the result of a ProDOS bug (some older versions had problems) or a serious problem in an application program. A damaged volume bitmap ($5A) can be especially dangerous, since it may allow you to save new files on top of your old ones (the volume bitmap is where ProDOS keeps track of which blocks on the disk are used by files and which can be used for new files). If you encounter one of these errors, stop using the disk immediately, switch to a backup, and seek professional help.

Professional help for damaged disks comes in several forms. Users of 8-bit Apple IIs (IIe and IIc) should investigate ProSel 8, a full-featured utility package. Among many other things, ProSel includes a program called Mr. Fixit, which can often salvage some or all of the files on a damaged disk. Users of the IIgs can choose from Salvation: Deliverance, ProSel 16, and Universe Master, all of which have data recovery capabilities. RepairWorks can also salvage AppleWorks word processor and data base files, as long as you can get a listing of the files on the disk (it does not repair corrupted directories). Remember, these programs are not foolproof—if your data is important to you, back it up!

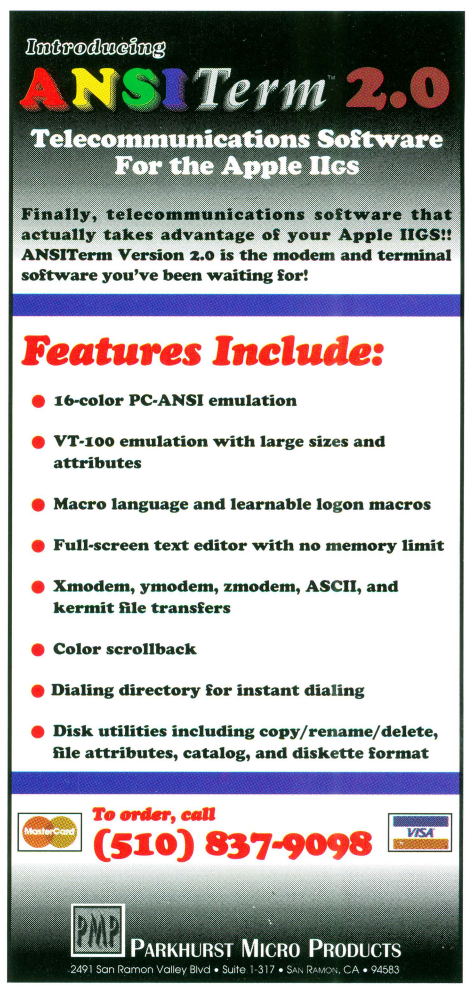
If you encounter Error $27 frequently, try a different brand of diskette. If the problem persists, have your disk drive cleaned and its speed and alignment checked. (You can do some of these procedures yourself.)

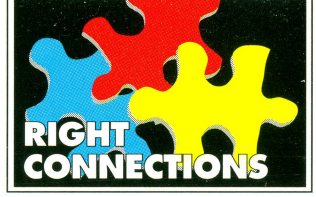
One special note to hard drive users. Modern hard drives rarely develop true bad blocks. If you encounter an Error $27 on your hard drive, it most likely indicates a problem with the drive's termination, cabling, or possibly a hardware failure of a more serious type.

As mentioned before, GS/OS uses many of the same error codes as ProDOS 8. When you see a four-digit error code with the first two digits $00, take the last two digits as a ProDOS error code and check Figure 4 for a possible explanation. Other error codes likely come from the IIgs Toolbox.

## Hold That Error!

If we haven't covered your most frustrating problem yet, don't worry. The second part of this article will discuss Fatal System Errors, some of the more common Toolbox error codes, recovering from lockups and crashes, and basic troubleshooting of your System Software and hardware. Try to stay out of the Monitor until then! ■




# Mobile Computing and the Apple II

**by Joseph Selur**

Being tied to a desktop computer can often be frustrating, especially if you've come to rely on the machine for everything you do. It is particularly exasperating to write anything longhand if you can type faster than you can write—it's just too slow and inflexible. In the nineties, people want to use their computers wherever they are. This wanderlust is the driving force behind the exploding popularity of laptop computers.

But ordinary laptops, to my mind, have several flaws that make them less than ideal. They're too bulky to actually be used comfortably on your lap (the key word being *comfortably).* They're fragile, so if they do fall off your lap you may incur serious damage. Their batteries only last a couple of hours before needing a recharge. And they're too expensive; traveling with a laptop will quickly make you paranoid about accidentally leaving it somewhere.

Most of these flaws arise from the impractical demand that the laptop be just as powerful as your home machine. In fact, the newest Macintosh portables, the PowerBook Duos, are designed to be literally desktop machines that you can take with you, leaving only some of the less frequently used peripherals at home.

But I don't want to take my whole computer with me. If you think about it, you probably don't either. The ideal portable computer, for me, would have a simple built-in word processor with basic text editing features. Since I'd just be using it for rough drafts, it doesn't need a spelling checker or any other fancy features. It wouldn't need a lot of memory, a hard drive, or even a disk drive, as long as it could retain my work until I had a chance to transfer the files to my main computer. It should be small and light—much smaller than even a PowerBook!—but it absolutely must have a full-size keyboard, with a feel that doesn't impede touch-typing. The display needn't be full-size, as long as I can see enough of my work to keep my train of thought.

And, of course, the ideal laptop would be inexpensive—within reasonable expectations—so I don't constantly worry about a thief making off with two thousand dollars' worth of computer equipment folded into a convenient book-size carrying package.

It may sound like blasphemy, but the ideal laptop doesn't even have to be an Apple, as long as it can easily talk to my Apple and trade files with it.

I'm a realist. I didn't expect such a convenient and useful computing package to actually exist, and so I never spent much time seeking it out. So I was surprised when a friend mentioned that the Tandy 102 portable computer just might be the perfect laptop for my needs.

With a full load of batteries (four standard AAs), the 102 weighs about three pounds. A fresh set of alkalines will run the machine for a 20-40 hours, so you may never even need rechargeable batteries. I'm still on my first set as I write this article (on the 102, of course). You can, of course, run the machine from an AC adapter when you're near an outlet, but for lengthy excursions away from civilization, you can easily and inexpensively build an external D-cell pack that will run the unit literally for weeks. I put Radio Shack's high-capacity rechargeable D cells in my pack.

The 102's LCD screen is easy to read under a variety of lighting conditions, and the 8 lines of 40 characters it displays is just enough to keep my thoughts organized while I'm working on a rough draft. The 102 has a (very) simple word proc-essor built into ROM, along with a functional BASIC, a slightly retarded but usable terminal program, and virtually useless address book and scheduling programs. The machine also has a ROM socket which can hold additional software—available ROMs include the Lucid spreadsheet, beefed-up word processors, and even macro assemblers. So-called multi-program ROMs are extremely popular; one, called Ultimate ROM II, includes (among other things) software which allows the machine to display 60 characters on each line of text instead of 40. I'm particularly interested in this one, though I haven't yet had a chance to acquire it.

All your work is stored in the computer's 32K RAM, which is battery-backed (the memory also retains its contents for a short while during battery changes). 32K RAM may not sound like much, but it'll hold two articles about as long as this one. If you need more work space, memory expanders—up to 256K—are available. You can also save your work to cassette tape, though I've heard reports that this feature is not very reliable.

The machine has an internal 300 BPS modem—slow by today's standards, but adequate for filing short documents via phone from the road. For faster data transfer, you can attach an external modem to the computer's standard RS-232 serial port. (The same port can be connected to your Apple II to transfer your documents to and from the portable.)

Of course, nothing's perfect. The 102 is no speed demon, for one thing. Its sluggishness is especially apparent while scrolling text in the word processor, though the machine's keyboard buffer lets you keep typing while the display updates. Also, the 102's word wrap feature doesn't work quite right, frequently placing spaces at the beginning of a line. And the shift-arrows (used for jumping from word to word) don't work quite the way AppleWorks users expect. You can (and will) get

used to these things with a little practice.

Best of all, Model 102s can be had at extraordinary prices if you look hard enough. People who know what they're worth want perhaps $200 for a used 102 in good condition. (A used Model 100, the 102's precursor with less standard memory, is worth a little less, while a 200, which has a larger screen and more ROM programs, is worth more.) But you'll probably be able to find a machine for a much lower price; mine cost me a slightly used 10-speed bike! As a last resort, you might buy one from your local Radio Shack—they're still being manufactured—but you'll probably pay 2-3 times what it's worth on the used market.

Since I got my Model 102 I've found out why it's so popular among reporters (virtually every major newspaper uses it extensively)—it's a simple, convenient, inexpensive machine for doing the tasks you're most likely to want to do on the road. No, you won't be able to put together a last-minute business presentation on the plane and print it on a convenient laser printer just minutes before the deadline, but if you need to do things like that very often, then you probably deserve all the advantages—and drawbacks—of a real laptop.

## THE APPLE II CONNECTION

No, I didn't forget that this is an Apple II magazine! As it turns out, connecting a Tandy 102 (or 100 or 200) to your Apple II is an extremely simple operation.

No matter which Apple II you have, you'll need telecommunications software (TIC, ProTERM, or anything similar will do the trick) and gadget called a null-modem adapter. (A null-modem adapter is used to make your Apple II believe that it's connected to a modem when it's really connected to the Model 102.)

If you have an Apple IIe, you also need a serial card (set up as if you were attaching a modem) and a DB-25 male-to-male serial cable (the same cable you'd use to connect to a standard modem). You may already have a serial card if you have an external modem or a serial printer.

If you have an Apple IIc or Laser 128, get an ordinary IIc to modem cable (DIN-5 to DB-25). If you have a IIGS or IIc+, you need a standard Mini DIN-8 to DB-25 modem cable.

If you have a modem or printer already on your serial port, you may want to invest in a switchbox and extra cabling so you don't have to re-cable your computer every time you want to transfer a few files.

You may be able to cheat on the cables just a little bit. I found that a IIGS to ImageWriter cable (Mini-DIN 8 to DB-25, cosmetically identical to, but wired differently from, the recommended modem cable) worked fine *without* the null-modem adapter, but your mileage may vary.

Connect the cables between the 102 and your Apple's serial port, and set the Model 102's terminal program (TELCOM) to use the RS-232 port at 4800 BPS. (Run TELCOM, type STAT 78N1E, and press Return.) If you never use the 102's internal modem, you will probably only need to do this once; the 102 will remember your serial settings until you change them with another STAT command. After issuing the STAT command, type TERM and press Return to enter the 102's "dumb terminal" mode.

On the Apple, set your telecomm package to 4800 BPS (check the manual for details on how to do this). If you use ProTERM, you'll need to configure the program to use a null modem instead of expecting to find an actual modem. If you do have a modem attached to your computer and have configured ProTERM to talk to it, you may find it simpler to leave the configuration alone and just tell ProTERM to go online when it encounters difficulty initializing your modem, as it will when there's no modem attached. Then type Option-T to enter the online state, and follow that with Open Apple-L to choose a communication rate of 4800 BPS.

At this point, the two machines should be connected. Characters you type on the 102's keyboard should appear on the Apple screen and vice versa. If this isn't happening, double-check your cabling and make sure you have a modem cable (not a printer cable) and a null-modem adapter.

Most of the file transfers you'll be doing will probably go from the 102 to your Apple—uploading rough drafts written on the 102 to be polished in AppleWorks or another word processor—so we'll cover this procedure first. Activate the capture mode on the Apple end of the connection (your telecomm software may call this the "copy buffer" or some other terminology—the basic idea is to capture everything that arrives via modem in the Apple's memory). Then, press the 102's F3 key (it should be labeled with the word "Up", short for upload). You'll be prompted for the name of the file you wish to send; type it exactly as it appears on the 102's main directory screen and press Enter. Press Enter again at the next prompt, which asks for the line width. If all is well, the

**It may sound like blasphemy, but the ideal laptop doesn't even have to be an Apple, as long as it can easily talk to my Apple and trade files with it.**



# Join The Party!

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file will begin scrolling up the Apple's screen. When the file has been completely transferred, deactivate the capture mode on the Apple, and save the capture buffer's contents to disk. ProTERM lets you store the document as an AppleWorks file; if you will be taking the file into AppleWorks or AppleWorks GS, save it that way. If you use a word processor which can't read AppleWorks files (or have a telecomm program which can't save in AWP format, which is more likely), save the document as a TXT file. (Use the "Make a new WP file from a text file" option in AppleWorks to read text files.)

You can transfer as many files as you like using this technique. When you're done, press F8 to disconnect the 102 from the Apple (type Y and press Enter when it asks if you really want to do that). Then press F8 again to leave TELCOM and return to the 102's main menu.

You can also transfer files the other direction, but it's quite a bit slower, thanks to the 102's slow scrolling. Every character sent from the Apple end must be displayed on the 102's screen, and it's easy to overrun the Tandy as it tries to keep up with scrolling the incoming text. The solution is to add an inter-character delay on the Apple end. (We could also just reduce the transmission rate, but then we'd have to change the settings on both computers; with the delay technique, we need only to change the settings on the Apple end.)

On the 102, press F2 to begin capturing the file to a text file. Type an appropriate filename and press Enter. Using the "ASCII send" feature of your Apple telecomm program, choose a "delay between characters" of around 1/60 second (ProTERM 3.x measures delays in hundredths of a second, so choose 2/100 if you use ProTERM). Set your telecomm program to never add returns at the end of lines (some programs never add returns; some, like ProTERM 3.x, automatically break outgoing text into lines unless you set the line length parameter to zero). Select the file to be sent from the Apple and begin the transfer. If you have ProTERM, you can send an AppleWorks file directly; with most other programs, you'll need to get the file into "standard text" format first (use AppleWorks' print-to-disk feature or AppleWorks GS' Save As menu item). The document will begin scrolling up the 102's screen. After the entire file has been transferred, press the 102's F2 key again to end the transfer. When you've transferred all the files you need to, disconnect (F8, then Y and Enter) and exit TELCOM (F8 again).

## LIFE ON THE ROAD

Once you get a portable computer, you'll start using it for everything. Even though I have a computer in my home, I often find myself sprawled out on the couch doing work on the 102. I take it to restaurants when I need to work on something for an after-lunch meeting. I take it to after-lunch meetings to take notes on. Some people go so far as to keep their portable computer at their bedside (in lieu of a pad and pencil) to jot down important nocturnal thoughts for safekeeping. (Myself, I hardly ever wake up with an important thought in my head.)

Lest you think that the Tandy portables are the only ones available, I should point out that NEC's 8201 is a virtual clone of the Tandy Model 100 (NEC makes the Tandy machines for Radio Shack). Laser's PC4 is a unit somewhat like the Model 100, only with a smaller screen (4 lines of 32 instead of 8 of 40), more built-in programs, and more memory (128K)—the screen is its chief drawback, but it's worth a look.

*See you on the road!*

## TANDY MODEL 100 SERIES RESOURCES

**Portable 100 Magazine**
P.O. Box 428
Peterborough, NH 03458
*Focuses on portable computing using Tandy notebook computers, including models 100/102/200*

**Club 100**
P.O. Box 23438
Pleasant Hill, CA 94523
510/932-8856
*National user group for Tandy laptop users. Also a major vendor of Tandy-compatible supplies, including the Ultimate ROM II multi-program ROM.*

**Tri-Mike Network East**
P.O. Box 372
Peterborough, NH 03458
603/924-8663
*Distributor of programs and peripherals for Tandy notebooks, including the Super ROM multi-program ROM.*

**Pacific Computer Exchange**
1031 SE Mill St. Suite B
Portland, OR 97214
503/236-2949
*Sells used & refurbished Tandy laptops and peripherals.*

**Computer Reset**
P.O. Box 461782
Garland, TX 75046
214/276-8072
*Sells used & refurbished Tandy laptops and peripherals. Recently advertised used Model 100 w/32K RAM & 128K bubble memory expansion for $199.*




# Phone Phun

**by Scott Corley**




Moving involves many activities that can only be described as tedious. Aside from having to carry years' worth of accumulated junk up and down stairs, there is the problem of getting a new phone number. Cellular phones and personal 1-700 phone numbers add to the phone number problem. Naturally, you want all your friends to have (and remember) your new number. How can you go about doing this? After all, having a cellular phone 24 hours a day doesn't help if nobody knows your number.

One solution is to get an easy-to-remember number, say one with all the digits the same, like 555-5555. This costs some bucks, though—my local phone company wants $80 before I can pick from the available local numbers. Another solution is to come up with a little jingle, a short ditty involving your phone number, and sing it until your friends beg you to stop. Anybody who has lived in Chicago or seen *Wayne's World* can tell you the number of Empire Carpets.

The easiest solution, of course, is to reduce the bits of information involved in the transmission. Since the dawn of time (or at least since the dawn of AT&T), telephones have had letters on their dials. Even though the powers-that-be decided that our beloved "Q" and "Z" were not worthy of the telephone spotlight, many businesses and individuals have successfully used the other letters to make their phone numbers memorable—the dog breeder with a phone number of YUP-DOGS, the jeweler with the phone number of DIAMOND, and so on.

While you can figure out what word you want and request the corresponding phone number, it's quite likely that your phone number already spells something. Some phone numbers are, naturally, better candidates than others. If your phone number contains a 1 or a 0, you won't have any letters in those spots to choose from. (I've seen a few pay phones with "Q" and "Z" on the 1 button, but this is relatively rare, so you're better off just ignoring 1 and 0.) You'll just have to work around this problem.

***Not too long ago, you could easily waste weeks of your valuable time sitting down and figuring out all the possible letter combinations for your phone number.***

***But now we have computers—more specifically an Apple II.***

Not too long ago, you could easily waste weeks of your valuable time sitting down and figuring out all the possible letter combinations for your phone number. But now we have computers—more specifically an Apple II.

How hard would it be to get our Apple II to list every possible 7-letter combination for a given phone number? There are three letters on each number, so each of the seven positions has three possibilities. Ask the nearest algebra teacher, and you'll find there are 3x3x3x3x3x3x3, or 3 to the seventh power, combinations of letters in the average phone number (fewer if you have any ones and zeros). This isn't an unmanageable number. In fact, it is exactly 2187. We can list 10 phone numbers on one line of an 80-column screen (with a space between each number), and the

screen is 24 lines tall, so we need less than 10 full screens of text to show us all the possibilities.

Type the program in Listing 1 exactly as it appears. Save it to disk by typing SAVE PHONEPHUN and pressing the return key. Type RUN to try it out. If it doesn't work right, use the LIST command to review the program, and retype any lines that are in error. Make sure you save any changes you make.

## HOW IT WORKS

The program begins by declaring an array of one-letter strings. Using a FOR/NEXT loop (line 10) and the READ command, we read the information declared in the DATA statement (at the end of the listing) into the array. These data are the letters of the alphabet; notice that poor old Q and Z, the underdog letters, are missing, and the bogus zero and one both appear three times. This is necessary to the general assumption that each number has three letters associated with it.

Now that our array of letters is set up, we can quickly access any of these letters randomly. Before we transmogrify a number, we of course need the number itself. Line 25 requests the number. Lines 40 through 60 create a new string, P2$, that contains only the numbers that were entered, throwing out all dashes and other characters. If we don't have seven digits by the time we reach line 70, we ask for the number again. If we get to line 80, P2$ will contain a legitimate 7 digit number.

The main gear grinding in this program occurs in seven nested for-next loops. Each for-next loop represents one digit in the phone number, so each one has to cycle through the three letters associated with that number. In lines 80-87, we convert each digit in the phone number to a range within our data array DT$(x). For example, the digit "2" must cycle through the range 7, 8, 9 in our array, as this is where we find the letters A, B, and C. (The IF statements on each line take care of printing each combination of zero and one only once. Without this logic, the program would print many duplicate combinations when a number contained one or more zero or one digit.)

The nested FOR/NEXT loops set up in lines 100-112 count through all possible combinations of letters. The innermost loop, corresponding to the last digit in your phone number, is constantly cycling through its three letters. The outermost loop, or the first digit in your phone number, makes its 3-letter run only once. Eventually, this technique hits all the letters.

Within this grand synergy of loops is some unsightly code necessary to format the numbers correctly on the screen or printer. Line 150 constructs the seven letter word using the letters in DT$. The numbers will be printed ten at a time, making one line on an 80 column display or the average dot matrix printer. The variables SD and VT keep track of the horizontal and vertical position, respectively, on the screen. If you want a 40 column display, you should cut the numbers in lines 330 and 350 in half.

When the program has completed its execution, the total number of combinations discovered will be displayed (line 410) and the program will end.

## HAVE PHUN!

Once you have your listing of "words" in hand, you might need some creativity to make the number actually "work." Two short words often pop up, or one word with one or two bogus letters. Feel free to put some numbers back in—for example, TOY4YOU or 2MYLOVE.

Let's try the U.S. Internal Revenue Service. Their number is 1-800-282-6689. After running the 7-digit portion through our magical program (it takes less than a minute), we see many garbled messes, but one combination jumps out: 1-800-C.U. BOOTY. One has to wonder if this was intentional!

Have fun with your phone number, and remember, if your number doesn't spell a word, your friendly local phone company will be happy to change it for you for a nominal fee. ■

**LISTING 1**

```
 10 DIM DT$(30): FOR I = 1 TO 30: READ DT$(I): NEXT
 20 PRINT CHR$ (4)"PR#3"
 25 INPUT "Enter phone number: ";PH$
 30 P2$ = ""
 40 FOR I = 1 TO LEN (PH$)
 50 P1$ = MID$ (PH$,I,1)
 55 IF P1$ > = "0" AND P1$ < = "9" THEN P2$ = P2$ + P1$
 60 NEXT
 70 IF LEN (P2$) < > 7 THEN PRINT : PRINT "Format: XXX-XXXX": PRINT : GOTO 25
 75 HOME : INVERSE : PRINT "Phone number: "; LEFT$ (P2$,3);"-"; MID$ (P2$,4);
 76 PRINT TAB( 80)" ";: POKE 34,1: NORMAL
 80 FOR I = 1 TO 7:LN(I) = VAL ( MID$ (P2$,I,1)): NEXT
 81 A1 = LN(1) * 3 + 1:A2 = A1 + 2: IF A1 < 7 THEN A2 = A1
 82 B1 = LN(2) * 3 + 1:B2 = B1 + 2: IF B1 < 7 THEN B2 = B1
 83 C1 = LN(3) * 3 + 1:C2 = C1 + 2: IF C1 < 7 THEN C2 = C1
 84 D1 = LN(4) * 3 + 1:D2 = D1 + 2: IF D1 < 7 THEN D2 = D1
 85 E1 = LN(5) * 3 + 1:E2 = E1 + 2: IF E1 < 7 THEN E2 = E1
 86 F1 = LN(6) * 3 + 1:F2 = F1 + 2: IF F1 < 7 THEN F2 = F1
 87 G1 = LN(7) * 3 + 1:G2 = G1 + 2: IF G1 < 7 THEN G2 = G1
100 FOR A = A1 TO A2
102 FOR B = B1 TO B2
104 FOR C = C1 TO C2
106 FOR D = D1 TO D2
108 FOR E = E1 TO E2
110 FOR F = F1 TO F2
112 FOR G = G1 TO G2
150 TX$ = DT$(A) + DT$(B) + DT$(C) + DT$(D) + DT$(E) + DT$(F) + DT$(G)
310 PRINT TX$;
318 SD = SD + 1:VT = VT + 1:CT = CT + 1
330 IF VT = 230 THEN VT = 0: GET W$
340 IF W$ = "Q" OR W$ = "q" OR W$ = CHR$ (3) OR W$ = CHR$ (27) THEN PRINT : POKE 34,0: VTAB 23: END
350 IF SD = 10 THEN SD = 0: PRINT
355 IF SD < > 0 THEN PRINT " ";
400 NEXT : NEXT : NEXT : NEXT : NEXT : NEXT : NEXT : PRINT
410 POKE 34,0: VTAB 1: INVERSE : POKE 1403,40: PRINT CT" combinations": NORMAL : VTAB 23
4000 DATA 0,0,0,1,1,1,A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,R,S,T,U,V,W,X,Y
```

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## HEAD OF THE CLASS

*(Continued from page 17)*

research the Gold Rush era using encyclopedias and other resources. Have the students discuss what might happen next, especially if you're stuck at a problem.

3. Make character studies by listing the traits of each character you meet in the game. Keep a list of the items in each scene to help develop attention to detail. Keep a list of the crucial clues needed to solve the game.
4. Have each student illustrate a different scene from the game, then ask the class to arrange the group of drawings in the correct order to emphasize sequencing skills, and cause and effect.
5. If other classes in your school, or other schools in the district, are using Gold Rush, have the students in the different classes write letters to each other discussing their progress in the game. You might also want to write a class latter to Sierra after you've completed the game to express your enjoyment.

## CONCLUSION

Playing the *Gold Rush* in your classroom will create a wonderful sense of excitement, while also helping your students hone their thinking skills. It really made history come alive in my classroom, and many of my students were inspired to further study of the history of the Old West. ■


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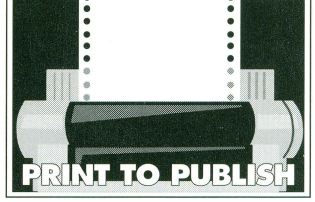
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# Desktop Publishing Basics

**Your Apple II (running desktop publishing software like Publish It! 4, Graphic Writer III, or AppleWorks GS) gives you many of the same capabilities that the pros have access to—and brings the power of the press right into your home...**

by Carl Sperber

In 1455, Johann Gutenberg invented movable type, putting the power of publishing into the hands of the people. Until that moment, books were extremely expensive because of the human labor involved in duplicating them. Most churches of the day had only one Bible. The printing press made it possible for the Bible and other books to be mass-produced and put into the hands of the people. Three centuries later, the printing press would prove to be a valuable tool in the American Revolution, with patriots like Benjamin Franklin and Thomas Paine using it to publicize the growing feeling of restlessness and frustration in the colonies.

In the early 1980s, desktop publishing was invented, primarily by three companies—Apple, Adobe, and Aldus. Today, very little printing and advertising is done without computers. Your Apple II (running desktop publishing software like Publish It! 4, Graphic Writer III, or AppleWorks GS) gives you many of the same capabilities that the pros have access to—and brings the power of the press right into your home, something that even Gutenberg never envisioned.

But buying a desktop publishing program doesn't make you a designer. There's a "visual language" of document design which most people aren't even consciously aware of. People just say that a document "looks wrong" when the language is violated. When you learn this language, your layout reinforces the message you're trying to convey, instead of fighting it. In this article and the next, we'll teach you the fundamentals of page design so that your computer-designed documents can be more effective.

## SPACING & SYMBOLS

You may be used to the usual punctuation rules from typing class: two spaces after a period, dashes represented by two hyphens in a row, and so forth. For many new to desktop publishing, the most startling new concept is that all these well-established rules change.

The reason is simple. The typewriter rules about spacing and punctuation are designed around the typeface (printing style) used by typewriters. That typeface is non-proportional, meaning that all the letters, numbers, and other symbols are the same width. This is simply because it's easier to design typewriters so that they advance a certain amount of space for all the letters. In such a typographical environment, the eye needs a good long gap at the end of each sentence to make it easier to detect a "full stop."

But in desktop publishing, you generally use proportional typefaces. With proportional typefaces, the letter "i" is narrower than the letter "m". Each letter uses up exactly the amount of space it needs, and no more. This is the way we subconsciously expect text to be spaced, so our eye has less difficulty reading it, and needs less space at the end of each sentence. In fact, if you have two spaces after each sentence instead of one, your document can look gap-toothed and, certainly, unprofessional.

Most desktop publishing programs also support special characters not available on typewriters. Take, for example, the em-dash—the long dash used in this sentence to indicate a break to a new thought. Instead of using two hyphens for this dash, you can type Option-Underscore (Option-Shift-Hyphen) in most IIGS desktop publishing programs to produce a single seamless character. There's also an en-dash, which is typically half the size of the em-dash and is used in compound fractions, like 3–3/4, available by typing Option-Hyphen. Use these keys for a while and they quickly become second-nature.

IIGS desktop publishing programs also support "curly quotes." If you look at the preceding sentence, you'll notice that the opening and closing quotes are different from each other—they curl inward toward the text they surround. This doesn't happen by magic; each typeface actually has two different quote marks, one to open the quote, and another to close the quote. (There are corresponding 'single' quote marks, or apostrophes.) You can generate curly quotes with Option-[ and Option-Shift-[, and curly apostrophes with Option-] and Option-Shift-]. The regular straight-up typewriter-style quotes and apostrophes should only be used for measurements in inches and feet.

Some desktop publishing programs include the option to automatically convert straight quotes to curly quotes as you type, or when you import text from another program. This



can make using curly quotes much easier, since you don't have to remember a new set of keys, but proofread carefully—when talking about the '80s, for example, the closing curly apostrophe should be used, but the program will probably use the opening apostrophe since it's at the beginning of the "word."

The ellipsis (the three periods normally used to indicate omitted text or a discontinued thought) has a special character, too... Option-Semicolon. Using this special character results in slightly more space between the periods than if you typed them one after another, but less than if you actually put a space between the characters (like you do on a typewriter).

Other useful characters include ligatures, which are single characters which consist of two letters joined together. You might use ligatures when talking about the Agæan Sea, or Œdipus Rex. Two other ligatures, fi and fl, help alleviate the visual problem of the hook of the "f" running into the dot on the "i" or the top of the "l" in some typefaces.

There are other little refinements you can make with the extra characters in most desktop publishing typefaces. Why write "35 degrees Fahrenheit" when you can write "35° F "? Also take note of the wide variety of legal symbols (© ® ™), mathematical symbols (√ ∑ ≠), and foreign language characters (¿ ñ «») available in most typefaces. There's even an Apple symbol (Option-Shift-K)! And be sure to take advantage of your desktop publishing program's small caps style to render the name of the IIGS as it appears on the front of the case—not as IIGS or IIgs. Attention to the small details will pay off.

## CHOOSING TYPEFACES

The most common mistake made by beginning desktop publishers is the inappropriate use of typefaces—usually too many of them. Typeface designers have been around since the Renaissance (Aldus Manutius is one of the best known from this era), and it seems like every typeface invented since then is now available in digital format. Amateurs often find themselves unable to decide upon a single font from the wide selection available, so they decide to use all of them.

The function of a typeface, however, is to unify your document's design. (Look at an Apple ad for a perfect example—virtually everything is in a single font, a variety of Garamond.) You lose visual unity in a hurry when you use more fonts than necessary. You rarely need more than five typefaces in a document. Often, as few as two or three will do the job if you use other typographical tricks (like boldface and italics). The key to elegance of design is simplicity.

Fonts are generally divided into two categories: text fonts and display fonts. Text fonts are designed to be readable at small point sizes (8-12 points) and are appropriate for the body of your document. Display fonts are designed to be readable at larger point sizes (14 points and up) and are appropriate for headlines and mastheads. Display fonts are intended to get attention; text fonts stress readability over personality.

Popular text fonts include Helvetica, Times, Palatino, and Garamond; popular display fonts include Helvetica Black, Futura Extra Bold, and bold versions of the popular text fonts. These fonts are widely available on the Macintosh, and you may be able to find IIGS versions of them as well. If you have Pointless, the entire world of TrueType fonts is open to you. If you choose a "busy" font for your headlines, use a simple one for your body text, and vice versa.

Some fonts, called serif fonts, have little flares at the ends of their letter strokes; others, called sans-serif fonts, don't have the flares. The text you're reading now is a serif font; the "Print to Publish" logo at the top of the first page of this article uses a sans-serif font. Most publications use a serif font for most of their body text. If you use a serif font for your text, consider a sans-serif one for your headlines, and vice versa.

Special-purpose fonts—ones that look like woodcut type or a city skyline or broken glass—are tempting, but are best reserved for logos (your newsletter or company name, for example). Even an "Old English"-style font falls into this category. These fonts should be chosen and used carefully, a maximum of one to a document—they have so much personality that they'll influence readers' perception of you or your publication. Be sure that the font does not contradict your message. Parents would never take their children to a day-care center whose logo was printed in a typeface straight out of a 1950s horror flck; no one would go to a doctor whose business card used a font made out of bones.

As an example of true economy in design, take a look at A2-Central, an eight-page newsletter formerly published by Resource Central. The body text is a font called Benguiat (say "ben-get"). Benguiat is a frisky font with a lot of personality—it resides just on this side of the boundary that divides beauty from tackiness. The same font is also used in page footers (where the page number and issue date appear) and, in a large, bold, italic verision, in the newsletter's masthead. To counterbalance this excessive friskiness, an extremely plain sans-serif typeface is used for article titles and various headings. And that's all there is to the newsletter's design. Two fonts. This minimalist approach can work wonders, and you'd do well to study it wherever you find it.

## COMING UP

In the second installment of this series, we'll look at the larger view—how to arrange columns of text on your page, how much white space to use, and how to use pull quotes and graphics to increase the visual interest of a page. ■

## TYPOGRAPHY *Terminology*

**BLACK:** Heavier (bolder) than Bold.

**BOOK:** The "plain" version of a font—that is, the one intended to be used for body text.

**CONDENSED:** Refers to a font which has been squished horizontally (resulting in a tall and thin appearance). For example, Helvetica Condensed is a horizontally squished version of Helvetica.

**DINGBAT:** A small graphics character, such as a small box, a pointing hand, or a pair of scissors, which is the same size as the surrounding text.

**EXTRA:** More of the same. An "extra bold" font is heavier (bolder) than the bold version of the font.

**ELLIPSIS:** The three periods used to indicate omitted text... or a trailed-off thought.

**EM-DASH:** The long dash used to indicate a change of direction—or a parenthetical statement.

**EN-DASH:** The short dash used in compound fractions like 33–1/3.

**FONT:** Traditionally, a particular size of a typeface (for example, Garamond is a typeface; Garamond 9 is a font). However, computers have blurred the distinction with their ability to re-scale typefaces to any size, and the terms are often used interchangably.

**HEAVY:** Refers to a font that is heavy in weight (i.e., bold). For example, Futura Heavy is bolder than regular Futura.

**ITALIC:** Slanted text used for emphasis or for foreign words.

**LIGATURE:** A single character that contains two other characters (for example, Æ or fi).

Light: Refers to a font that is light in weight. For example, Rockwell Light is a lighter version of Rockwell.

**MEDIUM:** Refers tc a font of "normal" weight. Usually means the same as "Book" but is used for display fonts, not text fonts.

**OBLIQUE:** Means basically the same as Italic.

**POINT:** A unit used for measuring the size of fonts. There are 72 points in an inch.

**TYPEFACE:** A set of letters with a particular "look and feel."

**WEIGHT:** The "boldness" of a font. Light fonts are thin and spindly; heavy fonts are thick and blocky.




# Visitation Rites

**by Jerry Kindall**

Now that you've made your first call to your local BBS, you've probably learned a lot—like which questions to ask. To help answer some of your inevitable questions, we thought we'd walk you through a session on a typical Bulletin Board system. We chose Pro-Quality (which is a ProLine BBS operated by Quality Computers and accessible at 313-774-2652).

We have edited out some of the things you'll see on these BBSs. A BBS can throw a whale of a lot of text at you; this information is vital when you're online, but it's redundant when you're looking at the information in printed form. So "condensing" our online session allows us to fit more of it into this magazine, while also serving to focus your attention at the really important things.

By the way, in the magazine, we've underlined the things you type to distinguish them from the things the BBS sends you. On your screen, naturally, they won't actually be underlined.

## THE GUIDED TOUR

Before you can do anything on a BBS, you must first get an account, as we mentioned in the last issue. Here's how it's done on Pro-Quality:

```
ATDT13137742652
CONNECT 2400
Pro-Quality (Quality Computers, Inc.)
St. Clair Shores, Michigan — ProLine 2.0

Log in as:    To do this:
---------     -----------
guest         look around without an account
register      sign up for an account
enhance       request a free ENHANCE subscription
oldies        download Beagle Bros oldies

Or enter your ID and password below.

login: register
```

Rule number 1: Read everything—you never know when you'll see a vital piece of information. There are no flashing lights to tell you what's important. BBSs, as we mentioned, tend to fling large amounts of (often extraneous) information at you, and let you sort it all out. On Pro-Quality's logon screen, we're instructed to "Log in as 'register' to sign up for an account" (among other things). So that's what we do.

```
Last login:  Tue,  3 Aug 93 14:38:31
ProLine 2.0 (C) 1984-92 Morgan Davis

  ================     Quality Computers Welcomes You To      _ _   _
=====          ======   ____  _ __ ___       ____ _   _  __| |_|_| |_ _   _
====             =====  |  _ \| '__/ _ \ ___ / _  | | | |/ _` | | | |_  _| | | |
====             =====  | |_| | | |  __/|___| |_| | |_| | (_| | | |  |_| |_| |
=====         \\\\\\==  |  __/|_|  \___/      \__  |\____|\__,_|_|_|  \__  |
  ============\\\\\\   |_|                       |_|                    |___/
              \\\\\\      300-14.4k BPS v.32bis     24 hours every day
                            System Admin: Jerry Kindall (jerry)
```

Many BBSs, including Pro-Quality, have some kind of snazzy graphic (created with normal text characters). This helps to establish each BBS's "personality."

```
============================
ProLine Account Registration
Version 2.3        21-Feb-92
============================

To register for an account on ProLine,
answer all questions asked.  The informa-
tion you give is known only to the adminis-
trator.

You must choose a unique login name.  This
is the name by which your account will be
referenced in all areas of the system.  A
login name is a derivative of your real
name.  For example, a login name for "John
Q.  Public" could be jpublic, johnp or jqp.

The system will suggest a name that you may
accept by pressing Return.  If you want be
known by a different name, backspace to
change the suggestion.  Use of "handles" or
"aliases" is highly discouraged. Login
names are 15 letters or less.  Use periods
for spaces.

When entering your password, the characters
you type are not displayed (for security
reasons).  You will verify your password by
typing it in a second time.

NOTE: To cancel your registration, press
Control-C or Escape.

There is no charge for system access.
```

The above information could be considered the "ground rules" for system access. Read it carefully.

```
Your first and last name : Apple2 Forever
Enter your LOGIN identifier: apple2f
```

Pro-Quality looks at your name ("Apple2 Forever" in this case), abbreviates the longer of the first and last name to an initial, and comes up with a suggested login identifier. Since "Forever" is longer than "Apple2," ProLine abbreviates "Forever" and comes up with "apple2f." If you'd signed up as "John Doe" ProLine would have suggested "jdoe" (since "Doe" is shorter than "John"). We can change ProLine's suggestion by pressing the Delete key to delete the unwanted letters and typing our desired identifier, or we can accept the suggestion as-is by pressing Return. We just pressed Return here.

```
Enter your PASSWORD choice :
Please type it in again    :
```

Your password, remember, ensures that nobody except you can use your account. (If someone else gains access to your password, they can log on and read your private mail, and also post messages under your name that may cause embarrassment.) For security reasons, ProLine doesn't show your pass-

word on the screen as you type it (to prevent someone from reading it over your shoulder)—therefore, to ensure that you didn't make any mistakes while typing your password, ProLine makes you enter it twice. If the two passwords match, then you probably didn't make any mistakes. We won't tell you what password we used, because you should never tell anyone your password.

```
You must supply the following information.
It will not be made public.

Street address (and apt. #): 20200 Nine Mile Rd.
City, ST (format: Nome, AK): St. Clair Shores, MI
Your postal (ZIP) code     : 48080
Phone number (xxx/xxx-xxxx): 313/774-7200

  Apple2 Forever
  20200 Nine Mile Rd.
  St. Clair Shores, MI  48080
  313/774-7200
  You will login as 'apple2f'

Is this correct? (Y/N) Y
```

ProLine asks us for our address and phone number so that the system operator (sysop) can contact us to verify our identity or in case of a problem with our account. We supply the requested information. When it's complete, ProLine asks us if we made any mistakes. We didn't, so we tell ProLine that our information is Oll Korrect by pressing the Y key.

```
Please memorize your password.

To keep your account, call at least once every 60 days.
Your cancel key is initially set to Control-C.

Login now in order to activate your account.

Press RETURN to continue:
```

ProLine gives us a few more words of advice (read it!) and then asks us to log in using our new user ID and password to activate our account. If we don't do this, we'll have to repeat the registration procedure the next time we call, so we press Return and are back to:

```
Pro-Quality (Quality Computers, Inc.)
St. Clair Shores, Michigan -- ProLine 2.0

Log in as:          To do this:
----------          -----------
guest               look around without an account
register            sign up for an account
enhance             request a free ENHANCE subscription
oldies              download Beagle Bros oldies

Or enter your ID and password below.

login: apple2f
Password:
```

We enter our user ID and password.

```
Last login:  Wed, 31 Dec 69 16:00:00
ProLine 2.0 (C) 1984-92 Morgan Davis

  ================      Quality Computers Welcomes You To
=====          ======   ____  _ __ ___   ____ _ __ ___ _| |_| |_ _ __   _
====            =====  |  _ \| '__/ _ \ ___ / _` | '__/ _` | | | | | | | |
====             ===== | |_| | | | |_| |___| |_| | | | |_| | |_| | |_| |
=====        \\\\\\==  |  __/|_|  \___/      \__,_|_| \__,_|_|\__,_|\__  |
  ============\\\\\\   |_|                                              |___/
              \\\\\\      300-14.4k BPS v.32bis     24 hours every day
                            System Admin: Jerry Kindall (jerry)

System News:   4 Jul 93 08:28:28 — Pro-Quality Now Even Faster!

Pro-Quality is now running on an Apple IIGS with Zip GS accelerator, RamFAST SCSI card,
and (best of all) a new QFaxModem v.32bis!  Those of you with MNP and/or high-speed
modems will enjoy the new modem.  If you do not have an MNP or high-speed modem, it may
take the BBS longer to "wake up" when you call. Do not be alarmed; this is normal.

You have mail.
```

In addition to the "banner," we also see the Pro-Quality System News (which the sysop updates periodically to send important messages to all users) and a notification that we have mail.

```
ProLine Users Shell 2.0

   Main Menu

   C = Conference System
   E = Electronic Mail...
   F = File Library

   H = Help Desk...
   I = Information Desk...

   P = Preferences...
   U = Utilities...

   B = Bye
   X = Expert Command Shell

Main Menu: E
```

This is Pro-Quality's main menu—the central point of departure for everything we do. Since we saw a note that we have mail, we press E to access the Electronic Mail menu.

```
   Electronic Mail (RETURN:Main Menu)

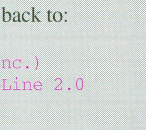
   R = Read Mail
   S = Send Mail

   W = Write to the Sysop

   M = Membership Directory...
   N = Network Directory
   I = Internet Tutorial

E-Mail: R
```

Here, we press R to read the mail we have waiting.




```
Mail (1.7 20feb92)

Opening...
You have 1 message (271 bytes)

Msg #   Size  Date   From    Subject
  1     271   Aug 3  jerry   Welcome to pro-
                              quality!

mail> Next
```

What do you know—our friendly sysop has left us a message already, and we haven't even been on the system five minutes! (Actually, this is a letter that ProLine sends to you automatically when you sign up for an account—an electronic form letter.) In ProLine's Mail module, pressing Return reads the next mail message, so we press Return. (The computer prints the word "Next" on the screen after the prompt, even though we pressed Return, not "N.")

```
Message 1 of 1, 271 bytes:

From jerry Tue Aug  3 14:39:43 1993
Date: Tue, 3 Aug 93 14:39:43 EDT
From: jerry (Jerry Kindall)
To: apple2f
Subject: Welcome to pro-quality!

If you ever need any assistance in using
this system, please do not hesitate to
write.  I'd like for you to get the most
out of ProLine. Enjoy.

 1 of 1: mail> Delete Current message
*1 of 1: mail> Quit — Delete all messages?
Yes
```

Since we remember our mother's advice to always clean up after ourselves, we delete the message after reading it unless there's some good reason to keep it around. We do this by pressing "D" for delete, then "C" for current message. (Although we only press "DC," ProLine shows us the full command on our screen.) Actually, the message is only marked for deletion—only when we quit the mail module (with the "Q" key) does ProLine really delete the message, and it asks us if we want to do that first.

```
   Electronic Mail  (RETURN: Main Menu)

   R = Read Mail
   S = Send Mail

   W = Write to the Sysop

   M = Membership Directory...
   N = Network Directory
   I = Internet Tutorial

E-Mail: <<
```

Pressing Return moves us out of the Electronic Mail menu and back to the Main Menu.

```
   Main Menu

   C = Conference System
   E = Electronic Mail...
   F = File Library

   H = Help Desk...
   I = Information Desk...

   P = Preferences...
   U = Utilities...

   B = Bye
   X = Expert Command Shell

Main Menu: C
```

We decide to check out the Conference System, which is where we'll find public discussions among other users. (On most other BBSs, this area is called the "bulletin board" or just the "boards.")

```
  ___
  | |
/___\
  |    Welcome To The Pro-Quality Conference System (Bulletin Board)

QUICK HELP: Press Return repeatedly for new messages in joined
conferences.
            Press 'L' to see a list of available conferences.
            Press 'J' to join a conference directly.
            Press '?' for more detailed help.

Version 2.7 23-Jun-92

Joined to 3 Conferences

Conference/Topic                New
--------------------------------
chatter/chat                     46
chatter/intro                    26
chatter/announce                  4
chatter/dl                        7
support/hardware                 27
support/q.labs                   23
support/timeout                  23
support/beagle                   20
support/misc                     41
--------------------------------

cs> Next Conference
```

Once again, pressing Return tells ProLine to join the next message area (conference) which has new messages. (Even though we pressed Return, the command "Next Conference" is still displayed so we know what just happened.)

```
Joining chatter/chat, 46 new messages
cs>read> Next
```

Another press of the Return key tells ProLine to read the next unread message. (Are you getting the idea that ProLine's motto may be, "When in doubt, press the Return key"?)

```
CS-ID: #0.chatter/chat@pro-quality 848 chars
Date: 30 May 91 17:44:26 EDT
From: jerry (Jerry Kindall)
Subject: Hi there

Hello, and welcome to Pro-Quality.  This is a topic for general
conversation about various things.  I guess that should be vague
enough, eh?  Also be sure to check out the chatter/intro topic
and leave a message telling others a little about yourself, if
you want to.

ProLine may be a little foreign to some people, so check out the
learn/cs and learn/tips topics.  (learn/tips is empty right now
until we get some tips in there.)  The basic idea of the Confer-
ence system is that you just keep hitting Return to go from one
message to the next, and from one topic to the next.  Not at all
difficult.  You join the conferences and topics you're interested
in, and resign from the ones you're not.

If you have any questions, leave me some mail.  I'll be happy to
help any way I can.

Now off to the intro topic to tell you a little about myself...

cs>read> Skip to Last message
```

We decide that this topic is full of chatty messages that we don't want to read (especially not 46 of them at once). So we press "SL" to tell ProLine to skip to the last message. ProLine (like most bulletin boards) only keeps track of the highest message number you've read in each message area, so it will think you have read all 46 messages if you just read the last one.

```
CS-ID: #45.chatter/chat@pro-quality 151 chars
Date: 30 Jul 93 16:07:44 EDT
From: rickb (Rick Brenner)
Subject: Hi There

Hi,
  I'm looking for a BBS near to my home in Port Huron. Anyone
have any local numbers I can call?
                                        Rick
LAST MESSAGE in chatter/chat
cs>read> Quit
```

Whoops. We're running out of time (well, mainly space for our article). Those other unread messages can be dealt with later, so for now we'll just quit the Conference System and go back to the main menu...

```
   Main Menu

   C = Conference System
   E = Electronic Mail...
   F = File Library

   H = Help Desk...
   I = Information Desk...

   P = Preferences...
   U = Utilities...

   B = Bye
   X = Expert Command Shell

Main Menu: B

Bye? (y/n) Y

Your session on pro-quality ends Tue,  3 Aug 93 14:53:08 EDT...
NO CARRIER
```

...and from the main menu, we'll log off the system and let someone else use it for a while.

## NEXT SESSION

This installment of our little column has, I hope, given you a taste of what BBSing might be like. In the next issue, we'll take a quick look at some of the other kinds of Apple II BBSs you're likely to encounter, including AppleNet, GBBS, FutureVision, and others. ■




► *Keeping our eyes peeled (with Ronco's Eye Peeler, only $14.95) we print only the freshest gossip. If there's not enough gossip, we make some up! As always, the Rumormonger reserves the right to be dead wrong. This column is for entertainment purposes only—if you're not entertained, you're not trying hard enough.*

## THE NINTENDO-IIGS CONNECTION

While Bill Heineman's Avatar (a new computer slated to have a IIGS compatibility mode) is stalled due to funding problems, we may be seeing other benefits from the Avatar R&D effort as early as this Christmas. Design work is almost finished for a plug-in cartridge for the Super Nintendo (which has the same 65816 microprocessor as the IIGS) to let it run Apple IIGS software. Custom chips designed for the Avatar will emulate the IIgs memory map, and a Toolbox "clone" programmed by Heineman will map the IIgs graphics modes onto the lower-resolution (but higher-color) Super Nintendo screen.

While Heineman reported at KansasFest that he's got the machine running HyperStudio and a couple other programs, don't expect all software to work flawlessly. For one thing, since most Super Nintendo machines are connected to televisions instead of computer monitors, small text is virtually unreadable. For another, Apple seems to have a habit of adding things to the IIgs Toolbox from time to time, meaning that Heineman will have to make sure his "clone" keeps pace with the Apple original. (Evidently one new undocumented tool call added in System 6.0.1 but lacking in the "Nintendo GS" caused the Teach word processor to blow up rather spectacularly.)

The unit is slated to have a disk drive, a keyboard, and 2-4 MB RAM. The disk drive uses MFM format disks and cannot read and write standard Apple II disks. An expansion chassis (for Apple II peripheral cards) may be marketed as an add-on. No word yet on projected price.

## DANCES WITH STYLEWRITERS

So far, we've heard rumors of two people—one from Southern California, the other from parts unknown—who have completed improved drivers for Apple's StyleWriter printer. One has created a GS/OS driver which is somewhat like Apple's, but improves the printer's output quality tremendously. The other has devised an INIT which allows ProDOS 8 programs to print to the StyleWriter as if it were a standard line printer (remember, the StyleWriter does not have any text fonts built in—this INIT is a simple software version of the "smarts" built into most dot-matrix printers).

The bad news is that patents are pending on some of the StyleWriter's software techniques (primarily the data compression used to speed transmission of printed pages). Information on programming for the StyleWriter is available from Apple only by special request (you must get approval from the bigwigs and sign a nondisclosure agreement). According to our sources, neither of our two intrepid hackers have signed non-disclosure agreements, which means that they didn't get their information on StyleWriter programming from Apple. The only other way to get this information is by disassembling Apple's driver, which is a violation of the System Software licensing agreement. While Apple usually doesn't seem to mind a little disassembly of System Software, expect them to care a great deal in this case in order to protect their patents.

Interestingly, Apple seems to consider the StyleWriter II even more technologically advanced than the StyleWriter. It is not possible to get any programming information of any kind for this printer, unless of course you work for Apple.

## COMMERCIAL EGOED

EGO Systems (publisher of *GS+* Magazine) is working on a version of EGOed that can be purchased without subscribing to the magazine. EGOed is a powerful text editor desk accessory sporting a full ruler, margins, find/replace, and many other features of standalone word processors. Since it's an NDA, you can edit documents while you're using *Platinum Paint, HyperStudio,* the Finder, or any other Desktop program.

EGO Systems has many other fine programs, such as *Replicator* (a disk duplication program) *Cool Cursor* (animated pointers), and *Rainbow* (which changes your active window's title bar color to let you more readily see which drive the window is from). All are available to *GS+* subscribers.

## HP DESKJET AND GRAVITY

Hewlett-Packard has lowered the price of their DeskJet 500 printers to about $250. The DeskJet is 300 DPI inkjet printer with near-laser quality. Connecting the DeskJet to your Apple II is easy, and HP even includes directions for Apple II installation in the manual. Not bad for a company whose salespeople tell you that the printer won't work with an Apple II. This price applies to the black-and-white DeskJet only. The DeskJet 550C (color) will most likely stay at its current price for a while, since they're having no problem selling those.

## GS CARS

The GS is a very influential machine. Its influence even extends outside the computer industry, into the automotive industry. Ford has the Tempo GS, the Sable GS, and the Grand Marquis GS. There's the Acura Legend GS, the Geo Storm (whose initials are GS), the Lexus GS, the Hyundai Excel GS, and—with an honorable mention—the Geo Prism GSi. It's good to know that so many companies still actively market the GS. Maybe I'll replace the Valdez (a '78 Ford wagon) with a "GS" this winter. ■




# Tutor-Tech: The 8-Bit Hypermedia Solution

**by Barry McDonald**

IIGS owners have HyperStudio. Macintosh owners have HyperCard. What about IIe and IIc users who want to enter the world of hypermedia? If you are the proud owner of an 8-bit Apple, don't get hyper: your II can do it, too.

Tutor-Tech is a powerful and easy-to-use 8-bit hypermedia authoring program that runs on any Apple II computer. Don't let the name of the product fool you: though its title breaks tradition by omitting the prefix "hyper," Tutor-Tech is a real live hypermedia program that boasts many of the same features that are found in 16-bit programs like HyperStudio. The product is aimed at the educational market—thus the name Tutor-Tech—but like other hypermedia programs, Tutor-Tech can be used to create all sorts of interactive multimedia presentations.

## HYPER-BASICS

Just what is a hypermedia authoring program? Hypermedia goes a few steps beyond traditional multimedia by providing more interactivity and allowing the components of a presentation to be linked in a more sophisticated manner. An authoring program is a piece of software that allows non-programmers to create their own games, presentations, or activities. Like the IIGS programs HyperStudio and HyperCard IIGS, and the Macintosh's HyperCard, Tutor-Tech is a software tool kit that allows you to combine bits of artwork, text, video, and sound to create your own custom-made software.

To survive in the world of hypermedia, you'll need to master a few simple concepts and terms. Creating a hypermedia presentation is a bit like creating a comic strip. One by one, you create the frames of the comic strip by drawing pictures and adding text. Unlike a comic strip, though, you can enhance your presentation by programming each frame to trigger other devices such as videodisc players, VCR's, and printers, and you can involve your audience in the presentation by asking questions, recording responses, and allowing them to choose what will happen next.

Most hypermedia programs refer to each screen or frame that you create as a Card. Tutor-Tech uses the term Page instead. Tutor-Tech uses the standard terminology for its other features, though. You connect pages with Buttons—graphics or screen areas that when selected will transport you to another page. The collection of pages you create is called a Stack. By adding invisible commands on the pages of your stack, you can send instructions to peripheral devices, telling a speech synthesizer what to say or instructing a videodisc player to display a particular passage of video. XCMD's (external commands) allow the program to communicate with external devices, reset pathnames, and invoke custom-made routines—special programs that add functions to Tutor-Tech in the same way that the TimeOut accessories add features to AppleWorks.

The stacks you design can perform various functions. At its simplest, a stack can be a computerized book that you flip through, one page at a time—for example, a training manual to teach others how to use a computer program. With a little more planning, this computerized text can become interactive, allowing the reader to select either a beginner's, intermediate, or advanced level of instruction, or to actually participate in a simulation of the program that is being discussed. A stack could take the form of a multimedia database or catalog such as an atlas of countries in which maps, textual information, video clips, still photographs, and passages of native music are combined to create a true sense of each country's heritage.

Stacks can also be designed to organize sounds and images that are recorded on other types of media. For example, you could create a stack on Impressionist Paintings which would find and display all of the impressionist paintings from a collection of artwork on a videodisc. Stacks that are used in this manner are known as front ends. They provide a custom-made interface for controlling other peripherals and for organizing large amounts of data.

**Tutor-Tech's grading features, it's ability to run on any Apple II, and Techware's commitment to educational stack development all make the program an appealing choice for many educators.**

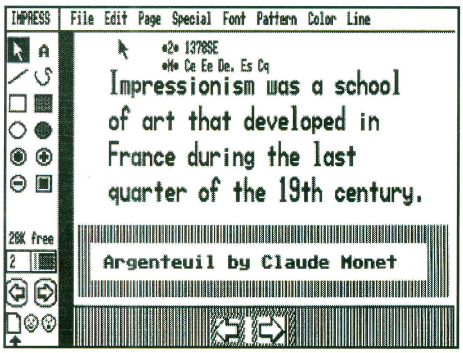



FIGURE 1

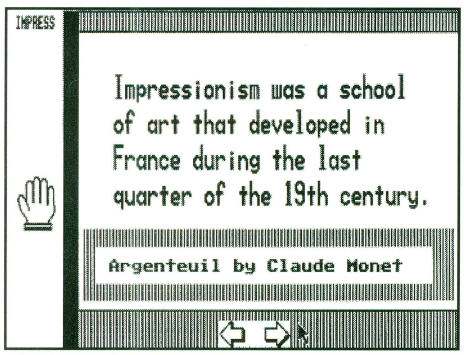



FIGURE 2

Variables allow the program to "remember" information that has been entered by the user. For example, the user can be instructed to type in his or her name at the beginning of a presentation, and the name that is entered can appear as part of the text in the presentation. Variables can also be used to keep track of answers and the number of correct and incorrect replies.

A stack can be a story, a lesson, or a test. It can be a slide show or filmstrip. It can be a game or puzzle. The possibilities are limited only by your own creativity and, practically speaking, by the number of peripheral devices you can afford to buy. You can create useful stacks with just the Tutor-Tech software, which contains some simple drawing tools and sound-generating abilities, but the scope and impact of your stacks will grow as you add video overlay cards, printers, and other devices to your system. Authoring programs like Tutor-Tech also allow you to import graphics from other programs like Dazzle Draw, Print Shop, and from clip art collections, so you can probably use some of your current software in conjunction with Tutor-Tech.

## GETTING STARTED

Tutor-Tech is composed of two programs: the Teacher program and the Student program. If you're not an educator, just think of these as the Authoring program and the Presentation program. You use the Teacher program to create your stacks and the Student program to play them back. This dual-module approach is an absolutely essential feature for educators who create lessons for curious and sometimes mischievous students, but the approach has advantages for all usrs. Besides preventing the end-user from tampering—intentionally or unintentionally—with the finished stack, it keeps each module's memory requirements low and allows a simplified interface in the Student module.

The Teacher program uses the familiar Graphical User Interface to organize a set of text and drawing tools and other program features. Tutor-Tech is an object-oriented program, so users of desktop publishing programs like Publish It! 4 or object-oriented drawing programs will feel at home right from the start. In an object-oriented program, each graphic or piece of text is an independent entity that can be moved, layered, resized, or deleted without affecting the surrounding objects.

A mouse is the preferred method for creating and manipulating objects, but you can also use a joystick. The finished stacks can be controlled by a mouse, joystick, or just the keyboard. This means that stacks can be used on virtually any Apple II, with or without a hand controller. Game paddles, a Koala Pad, or an Edmark TouchWindow can also be used to control both modules.

## ADDING THE MULTI TO YOUR MEDIA

A Tutor-Tech presentation at its simplest can consist of words and pictures displayed on the computer monitor and controlled from the keyboard. The program by itself can generate musical notes and comes with a variety of canned sounds. If you're a prolific peripheral purchaser, though, Tutor-Tech allows you to integrate videodisc players, the Echo and Cricket speech synthesizers, audio tape players, printers, VCR's, and the Apple II Video Overlay Card into your presentation.

You control most of these devices by typing command lines on the page. A command line typically consists of a slot number surrounded by bullets (press Solid-Apple-8), followed by an instruction. For example, the command •5• 15000SE tells a videodisc player plugged into slot 5 to search for frame 15000. The command line •V4•C=BLK ©20 K=0 would instruct an Apple II Video Overlay Card plugged into slot 4 to display a passage of video in the black area of the screen for 20 seconds and then stop overlaying. These command lines are displayed on the screen as the stack is being created, but they become invisible when the stack is presented.

A command line that begins with the letter M will invoke Tutor-Tech's musical abilities. For example, if you type •M• E D C, you will hear the first three notes of "Three Blind Mice" when that page is displayed.

## CONSTRUCTING A PAGE

Let's see how a typical page might be constructed. Figure 1 shows a page from a stack about impressionist paintings as it looks in the Teacher Program. The left side of the screen contains the tool palette while the rest of the screen contains the page that is being worked on. To construct this page, I first used the Filled Rectangle Tool to create the various rectangles which form the background. I then typed the text using two of the four fonts that the program provides. I used the Import command from the File Menu to copy the arrow pictures from one of several files of clip art that come with the program and place them onto my page. The arrows are used as buttons: by selecting one, the user can go forward or backward one page. However, before the arrow pictures would function as buttons, I needed to use the Proceed Button Tool (the filled circle) to define those areas of the screen as buttons and to specify where each button leads. The rectangle around each arrow marks the actual button area that I defined.

This stack was designed to work in conjunction with a videodisc titled *National Gallery of Art* which contains reproductions of hundreds of classic paintings. The videodisc is placed in the player before the stack presentation starts. The command •2• 1378SE causes the videodisc player to search for and display frame 1378 when this page is reached, displaying the painting "Argenteuil" by Claude Monet on the television screen. The second command line plays a short musical passage. The capital letters are the notes, and the lowercase letters are the note values: e=eighth note, s=sixteenth note, q= quarter note.

Figure 2 shows what the same page looks like when the stack is being presented with the Student Program. Notice that the menu bar is gone and the tools area has been replaced with a Stop Hand which can be selected to stop the stack. Once the stack is stopped, the left area of the screen will offer other options which can be used to select a different stack, resume the same stack, or quit the program.

Note that the command lines do not appear in the Student Program. Instead, the actions that they describe are carried out: the painting Argenteuil appears on the television screen and the melody is played. Hear it? Also notice that the rectangles that defined the button areas have also disappeared, but the arrow pictures still function as buttons, taking the user backward or forward one page.

## MAKING THE GRADE

Because it was designed as an educational program, Tutor-Tech offers several methods of grading responses or keeping score. It can keep track of right and wrong responses, and can automatically calculate a percentage score at the end of a test or activity. You control the way that Tutor-Tech keeps score by using a

combination of right answer, wrong answer, and neutral proceed buttons when you create the stack. (These appear on the tool palette as circles containing, respectively, a plus sign, a minus sign, and a solid fill.) As with the other education-oriented features of the program, the score-keeping features can be used in more general ways to provide feedback, report game scores, or trace a user's progress through a stack. For teachers who want to use Tutor-Tech to present tests or graded assignments, Techware sells a separate Grader program that can assemble and keep track of the scores of an entire class and print them out in gradebook form.

Techware also takes an active part in collecting and distributing educational stacks through its Stack Exchange newsletter. The newsletter promotes both professionally designed commercial stacks and more modest shareware and public domain stacks on topics ranging from the life of Martin Luther King to the life cycle of red salmon. The company encourages and supports stack authors by soliciting and marketing well-designed stacks, and for a small fee, serious developers can subscribe to a developer support program which provides more extensive support.

Tutor-Tech's grading features, it's ability to run on any Apple II, and Techware's commitment to educational stack development all make the program an appealing choice for many educators.

## HOW TUTOR-TECH STACKS UP

Admittedly, users of IIGS-specific authoring programs will find Tutor-Tech a bit primitive. For example, Tutor-Tech handles lines of text in the same manner that drawing programs do—as graphic objects—not as actual text, so text must be entered manually and cannot be imported from a word processing program as it can in most other programs. Because Tutor-Tech's text is "drawn" on the screen, it also is more time-consuming to edit. Other common 16-bit features such as scrolling text fields, the ability to record digitized sounds, and a scripting language are not available in the current version of Tutor-Tech.

But Tutor-Tech is no light-weight. Some of its features match and even outshine those of the 16-bit programs, and even those of HyperCard. For example, you can generate musical notes in a Tutor-Tech stack using the same commands that are used in HyperCard's scripting language, but Tutor-Tech adds features like variable volume control and the ability to play two notes at once, and offers a wider range of notes than HyperCard does. Tutor-Tech also contains the same international character set that is available in HyperCard, allowing you to type in German, Spanish, and other languages.

Whereas the GS programs require 1.5 to 2 megabytes of RAM and at least a 3.5" disk to function, Tutor-Tech can operate quite well on a single 5.25" floppy with as little as 128K of RAM. And, of course, Tutor-Tech is the only one of these programs that runs on any Apple II. Tutor-Tech meets the needs of an amazingly wide variety of users: It has the savvy to work with AppleShare and other networks, yet it will also run fine on an unenhanced IIe. It functions reasonably with 128K, but it also supports RAM disks and extended memory. Though GS users must run the program in 8-bit mode, the GS's increased speed really makes the program fly, and future GS-specific XCMD's will further enhance the program's abilities for GS users.

## TECHWARE AND TUTOR-TECH: ALIVE AND WELL

Today, as some Apple II publishers turn their interests to the Macintosh or quietly fade away into software history, Apple II owners rightfully wonder about what type of support they will receive in the years to come. Although no one can guarantee what the state of the computer universe will be several years from now, Apple II owners will be glad to know that Techware plans to continue updating and supporting Tutor-Tech in the future.

The company has expand the capabilities of its product since its inception in 1985. (Tutor-Tech was around before either HyperCard or HyperStudio.) Tutor-Tech is now in version 2.7. Last year, the Texas Computer Literacy Proclamation adopted Tutor-Tech for all of the schools in the state and Techware looks forward to expanding its customer base as other state-wide organizations adopt Tutor-Tech as a product of choice.

Techware offers excellent telephone support—although their tech support number is not an 800 number—and runs a support area on America Online. In addition to their Stack Exchange newsletters and their Developer Support program, the company distributes a free Tutor-Tech demo disk, and has in the past made several useful free utilities available to their customers, including a Mac2Pic utility that converts MacPaint picture files to Apple II ProDOS format.

Tutor-Tech seems to be as safe a bet as you can find in the Apple II world, and since Tutor-Tech is built around many of the standard hypermedia concepts and terms, if you someday move on to hypermedia a la GS or Macintosh, you will be able to make a smooth transition. So if you're an 8-bit owner who's been feeling left out, don't get hyper: get Tutor-Tech. ■

For more information about Tutor-Tech, or to order a free demo disk, contact Techware Corp., PO. Box 151085, Altamonte Springs, FL 32715-1085, (800) 347-3224.

**OTHER 8-BIT OPTIONS:**

Though Tutor-Tech is a complete hypermedia solution for the IIe and IIc, there are a few other ways that 8-bit users can get their hyperfeet wet.

If you use Logo Computer System's LogoWriter, you can purchase LogoWriter Hypermedia Tools, an inexpensive add-on which gives LogoWriter hypermedia capabilities. Contact Logo Computer Systems Inc., P.O. Box 162, Highgate Springs, VT 05460, (800) 321-5646.

Media Magic, from Toucan/Queue, is the Print Shop of Apple II hypermedia software. More a screen presentation program than a true hypermedia package, the program comes with a collection of artwork, backgrounds, sound effects, and musical passages that you can quickly link together using scripting commands and buttons. Media Magic also allows you to create your own music and artwork, but the program lacks the ability to communicate with peripherals, though it does work with the Apple II Video Overlay Card. Contact Toucan/Queue at 388 Commerce Drive, Fairfield, CT 06430, (800) 232-2224.

Robert Moore's StoryWorks is an interesting little program which allows AppleWorks Classic users to link the pages of an AppleWorks word processing file together into an interactive presentation. Though the program offers no graphics and does not communicate with external devices, it allow you to add sounds to your text and can presents AppleWorks files in either 80-column or a much larger 30-column format. For more information contact the Teachers' Idea and Information Exchange, P.O. Box 6229, Lincoln, NE 68506, (402) 483-6987.

# SYSTEM 6.0.1

## One small step for a version number—one giant leap in capability!

BY J.P. SANGOLE

*System 6.0.1 also fixes literally dozens of known bugs in System 6. Some of these bugs affect end users directly. Others mainly affect programmers, who had to "program around" the bugs. Everyone who uses System 6 should upgrade to System 6.0.1 for this reason alone, even if you're not interested in any new features.*

In July, 1993, Apple quietly released Apple IIGS System Software 6.0.1. Despite the small change in the version number, System 6.0.1 represents a significant upgrade in system software capability and adds many additional features from the Macintosh's System 7.

System 6.0.1 also fixes literally dozens of known bugs in System 6. Some of these bugs (for example, problems with the Find File desk accessory and the shutdown sound in the Sound control panel) affect end users directly. Others (such as bugs in the IIGS toolbox) mainly affect programmers, who had to "program around" the bugs. Everyone who uses System 6 should upgrade to System 6.0.1 for this reason alone, even if you're not interested in any new features.

### FINDER KEYBOARD NAVIGATION

This is the hottest new feature in System 6.0.1, and with good reason. In addition to using the mouse, you can now navigate through disks' contents using only the keyboard. You won't believe how much of a time-saver this is until you've tried it a few times.

The up, down, left and right arrow keys select the icon above, below, to the left of, or to the right of the currently selected icon. (If no icon is currently selected, the arrow keys select the topmost, bottom-most, leftmost, or rightmost icon in the window.) Windows will automatically scroll, if necessary, to reveal more icons when you press the arrow keys.

You can also select an icon by simply beginning to type its name. For example, to open the System folder in the frontmost window, you can just quickly type "SYS" and, assuming there are no other icons that start with those letters, the System folder will be selected. (This is similar to the way Standard Open and Save dialogs work.) You have to type at least one character every third of a second to use this feature.

Pressing Tab selects the next icon, alphabetically, after the currently selected icon (regardless of its actual location in the window). Shift-Tab selects the icon alphabetically prior to the currently selected icon.

Naturally, once an icon is selected this way, you can press Apple-O to open it. You can also use Apple-W to close windows. These keys have always been a part of the Finder, but combined with the new navigation keys, they gain additional usefulness, since you can now quickly open up (say) your Drivers folder, deep inside the System folder, just by typing "Sys," Apple-O, "Dr," Apple-O. No scrolling—and no mouse jockeying—is necessary.

Press Return to begin renaming an icon. Once you press Return, you can use the standard line-edit keys (arrows, Delete, etc.) to change the name. Press Return when you're done.

The keyboard navigation works with disk icons, too. If you don't have any windows open, you can use the keys as described above to select disk icons on your desktop, as well as any other icons you have left there (like programs, documents, control panels, etc.). If you do have windows open, press Apple-Escape first (otherwise you will probably be selecting icons in the front window), then proceed as usual. To return to a window and select icons there, either open a window (automatically "moving" the keyboard controls to the new window) or press Escape (to "move" the keyboard controls back to the current frontmost window).

You can select icons on the Desktop even if your entire screen is covered with windows—extremely useful for opening up disks without moving lots of windows! Just press Apple-Escape, type the beginning of the disk's name, and press Apple-O.

You can also cycle through your windows using the keyboard. Pressing Apple-Keypad-0 moves the frontmost window to the back of the "stack," revealing the second window. Pressing Apple-Keypad-Shift-0 moves the bottom-most window to the front of the "stack." After selecting a new window—either with the keyboard, the Windows menu, or by simply clicking in the window—you will need to press

Escape to move the keyboard controls to the new frontmost window (otherwise you'll be selecting icons in the former frontmost window). In other words, the "target" of the keyboard controls is not always the frontmost window, al though opening a window does move the "target" to the new window.

## MAGIC SYSTEM FOLDER

The "magic" System folder allows you to drop Desk Accessories, Control Panels, drivers, FSTs, tools, fonts, sounds, INITs, and Finder Extensions on the System Folder. The Finder will automatically figure out which subfolder within the System Folder each item belongs in and place it there for you (after asking your permission to do so). For example, if you drop a font on top of the System folder icon, the Finder will automatically place it in the Fonts folder for you. This elimiantes the step of opening the System folder and finding the appropriate sub-folder before you can install new system elements.

The "magic" of the System folder only works when you drop a file on the startup volume's System folder (the white folder with an Apple on it). Other folders named System don't count. Also, dragging a file into the System folder's window (instead of the icon itself) will place the file inside the System folder, bypassing the automatic routing feature.

There appears to be a minor bug in the "magic" System folder feature, at least in our tests. Once you have used the auto-routing feature once, the System folder turns yellow and the magic is gone. Items dragged to the System folder while it's yellow will go into the System folder and will not be routed correctly. Closing and re-opening the startup disk's window puts the Apple back onto the System folder icon and re-activates the magic. Alternately, if you move the System folder to the desktop and leave it there, you will never encounter the problem.

## OTHER NEW FINDER FEATURES AND CHANGES

The Finder's "Show Clipboard" option (on the Edit menu) now handles sounds in addition to text and graphics. If you copy a sound to the clipboard (with the Sound control panel, for example), the Show Clipboard window will display a speaker icon. Clicking the Speaker icon will play the sound.

In a Finder window viewed by Name, Date, Size, or Kind, you can now click on the word "Name," "Size," "Kind," or "Last modified" to change to the corresponding sorting order. This is a shortcut for changing the view with the View menu.

The Finder now creates the FinderExtras folder if it does not exist. (Finder Extensions placed in FinderExtras occupy memory only while the Finder is active, but may cause delays when you return to the Finder. Finder Extensions can also be placed in System.Setup to reduce this delay, but they'll occupy memory in all programs.)

In the Icon Info window on an Apple SCSI device, the SCSI ID number appears on the "Where" card.

To rename an icon, you must now click its name (or press Return). Clicking the icon does not automatically select its name for editing.

Holding down the Option key while dragging files on the same volume now forces the icons to be copied (instead of being moved from one folder to another). The "Copy Alternatives" dialog, which used to appear when you Option-dragged, is gone.

Dragging a rectangle around icons to select them now selects and de-selects icons as you drag the mouse. (Previously, you had to release the mouse button to see your new selection.)

## OTHER NEW SYSTEM 6.0.1 FEATURES

A new checkbox in the Monitor control panel, "Smoother Mouse Cursor," can help solve cursor flickering problems on accelerated systems or with the Video Overlay Card.

A new checkbox in the SetStart control panel, "Show icons during startup," allows you to turn on and off the display of the icons of software (INITs, Finder Extensions, and Desk Accessories) loaded at startup. A second new checkbox, "Enable programmer CDAs," automatically installs the "Visit Monitor" and "Memory Peeker" CDAs every time you start up the computer.

The RAM5 Disk has a new GS/OS driver which makes the RAM Disk much faster. To use this driver on a ROM 01 IIGS, the computer's Minimum and Maximum RAM Disk settings must be the same. The driver also allows you to access the RAM Disk from GS/OS (but not ProDOS 8) even if Slot 5 is set to Your Card.

## INTO THE FUTURE

Apple is leaving the possibility of a System 6.1, or at least a System 6.0.2, open for the future. No promises, it seems, but neither are they saying that there won't be another update. Obviously, talking about any new features in the future would be mere speculation, but we can probably expect a read/write MS-DOS FST (instead of a read-only one) and a few more bug fixes. Even if we don't get another update, though, Apple has already provided us with support above and beyond the call of duty. Check it out today! ■

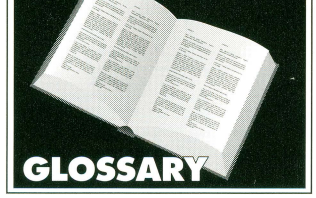
## NEW FEATURE SUMMARY

- **FINDER ENHANCEMENTS:** Finder enhancements make up the bulk of the new System 6.0.1 features. Major features include keyboard navigation, a "magic" System folder, and expanded alias capability (via EasyMount).

- **MS-DOS DISK SUPPORT:** Now your IIGS can read (but not write) MS-DOS (IBM PC and compatible) disks. To use this capability, you need a disk drive that is capable of reading MFM-format disks (normal Apple disks are in GCR format), such as an Apple 3.5" SuperDrive attached to an Apple FDHD Controller, a SCSI "floptical" drive, or a PC Transporter with TransDrive. The IIGS still can't run MS-DOS (or Windows) software, but exchanging data is easier than ever.

- **NEW CONVENIENCE FEATURES:** System 6.0.1 smooths out the IIGS's operation even more than System 6. For example, there are new options in the Control Panel for enabling smother cursor movement, showing the icons of INITs during startup, and enabling the Memory Peeker and Visit Monitor CDAs. You can now boot directly into ProDOS 8 (bypassing GS/OS and the Finder entirely) by holding down the 8 key as you start up the machine.

- **BUG FIXES:** Major bugs fixed include the inability of a ROM 03 IIGS with 8 MB RAM installed to use a RAM Disk, crashes in the Find File desk accessory, failure of the Shutdown sound to play properly, and a problem with the SANE toolset which causes AppleWorks GS and some other programs to lock up under certain circumstances. AE Vulcan users will find installation easier because the installer won't keep asking them to insert their hard drive. There are dozens of other bugs fixed, too, all of which will allow developers of IIGS programs to write more stable software.




# ProDOS Disks

**BLOCK:** Each track on a disk or hard drive is divided into blocks. A block holds 512 bytes of data (half a kilobyte) and is the basic unit of storage for ProDOS disks. All data flows to and from disk drives in blocks.

**BOOT:** The process of loading system software and running the first application. It's called booting because the computer starts up using a very small program, which loads successively larger programs until the entire operating system is loaded, a process reminiscent of "pulling yourself up by your own bootstraps."

**CACHE:** Pronounced "cash." An area of fast memory used to hold the most frequently used data from slow memory. For example, GS/OS includes a cache to speed up access to frequently-used disk blocks.

**COMPLETE PATHNAME:** A pathname which begins with a slash and tells ProDOS all the directories which must be searched to get to the desired file. For example, /Q1/AWFILES/MYFILE is a complete pathname. See also Partial Pathname.

**DIRECTORY:** A generic term which can refer to either a subdirectory (folder) or a volume directory. ProDOS uses directories to keep track of where your files are stored, what their names are, the last time they were changed, and so forth.

**DRIVER:** A part of GS/OS which allows the computer to access a particular device. For example, there are drivers for floppy disks, hard drives, and even RAM disks. Some types of devices can be accessed without a driver, but are faster if you have a driver installed.

**FILE:** A collection of related data stored on a disk under a file name. Files can contain programs (SYS, S16, BAS files), data (AppleWorks and text files), other files (subdirectories), and almost anything else.

**FOLDER:** A subdirectory. The GS/OS Finder displays subdirectory files as folder icons, which is a good conceptual representation of what they do and how they work.

**FORMAT:** As a verb, to prepare a new disk or drive to receive files, or to erase an old disk or drive to allow it to receive new files. As a noun, refers to the type of operating system which will access the disk; for example, you might say that a disk is formatted "in ProDOS format." See also Low-Level Format and High-Level Format.

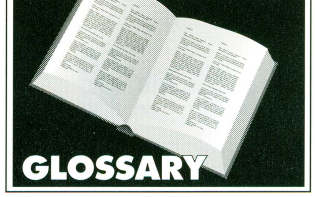
**FRAGMENTATION:** A condition which gradually becomes worse as you use your hard drive. As you add and delete files, your files will end up spread all over the hard drive, significantly degrading performance. Fortunately, optimizer utilities are available.

**FST:** File System Translator, a part of GS/OS which tells it how to read and write various formats of disks. For example, there's a ProDOS FST, an HFS (Macintosh) FST, and an MS-DOS (IBM) FST.

**GS/OS:** The Apple IIGS Operating System, specifically designed to take advantage of, and provide user access to, the advanced features of the Apple IIGS. GS/OS manages access to disks and other devices, and is closely knit with the IIGS Toolbox.

**HIGH-LEVEL FORMAT:** A format procedure which rewrites only the directory blocks on a disk or drive. This deletes all the files on the disk and lets the operating system re-use the blocks which they occupied. However, because only a few blocks are rewritten, a high-level format is much faster than a low-level format. Use a high-level format when you want to quickly erase all the files on a disk or a hard drive partition. The IIGS Finder's Erase Disk and Copy II Plus's Delete Disk are high-level formats. It is sometimes possible to recover files deleted by an accidental high-level format.

**INTERLEAVE:** A term describing how the blocks are arranged on a track. If a disk's interleave is 1:1, it means that blocks are numbered consecutively on each track. Right after block 1 you'll find block 2; after that, block 3, and so on. But every time a block is read, the computer needs a little time to process the data it has just read. In the time it takes to do this, the next block may have already passed by the read/write head. When this happens, the computer has to wait nearly an entire revolution of the platter for the desired block to come around again. Larger interleaves give the computer more time to process the data by staggering the block order. For example, with a 2:1 interleave, the blocks might be arranged in the order 1, 15, 2, 16, 3, 17, and so on. While block 1 is being processed, block 15 will pass by, and when the computer is ready to read block 2, it will be able to do so without delay. Floppy disks have a 2:1 interleave; most hard drives use a 2:1 or 1:1 interleave.




# and Directories

**LOW-LEVEL FORMAT:** A format procedure which completely rewrites every block on a disk or drive, in order to lay down the "markers" which allow the drive to find each block. A low-level format, also called a hard format, will completely erase a disk, beyond hope of recovery, and may take several minutes. Contrast with High-Level Format.

**MEDIUM:** The material that stores data. For example, 5.25" floppy drives use 5.25" media. Hard drives are said to be "fixed-media" devices because the platter is sealed inside the drive.

**ONLINE:** When a disk is available for use by the computer (that is, in a disk drive), it is said to be online. Disks that aren't in drives (or, for example, hard drive that's turned off) are considered offline.

**PARTIAL PATHNAME:** A pathname which does not begin with a volume name. ProDOS adds the prefix to the partial pathname to get the full pathname of the file. See also Complete Pathname.

**PARTITION:** Since ProDOS and GS/OS only support drives 32 megabytes in size, larger hard drives must be divided into smaller partitions. The operating system sees each partition as a separate volume, even though there's only one box sitting on the desk. "Partition" can also be used as a verb meaning to divide a large drive into smaller volumes, often called "logical drives."

**PATHNAME:** The series of directories ProDOS must look in to find a specified file. For example, if a file named MYFILE was inside a subdirectory called AWFILES on the hard drive called /Q1, the pathname of MYFILE would be /Q1/AWFILES/MYFILE.

**PREFIX:** The "default directory" which is added to a partial pathname. If you are often accessing files in a particular directory, you can set the prefix to that directory so that you don't have to type the full pathname of each file you specify.

**ProDOS:** The standard operating system for 8-bit Apple IIs (Apple IIe, IIc, and IIGS when running 8-bit software). ProDOS 8 manages disk access and interrupts (and, to a limited extent, memory) for 8-bit programs.

**ProDOS 16:** The predecessor of GS/OS, ProDOS 16 was essentially ProDOS 8 with a 16-bit "front end." GS/OS is a full 16-bit operating system and should be used in place of ProDOS 16 when possible. (Some old programs don't follow the rules and won't run under GS/OS.)

**READ/WRITE HEAD:** Like the head in a tape recorder, the head in a disk drive detects and imprints magnetic impulses on a magnetic material—the disk, or the hard drive platter.

**RAM DISK:** A super-fast simulated disk drive within your computer's extra memory. The contents of a RAM Disk disappear when you turn off the computer, but its speed makes it perfect for temporary storage of programs and data.

**SUBDIRECTORY:** A file which contains other files. Also known as a folder.

**SYSTEM SOFTWARE:** The software provided with the computer that forms the foundation which all other software works with. Includes ProDOS 8, GS/OS, the Finder, and other programs provided with your computer including the System Utilities, the Installer, and the Advanced Disk Utilities.

**TRACK:** A series of invisible concentric circles into which a disk or hard drive platter is divided. The drive's read/write head is moved horizontally to access a particular track on the disk or platter.

**VOLUME:** A disk (any kind—a floppy, or even a hard drive or a RAM disk).

**VOLUME DIRECTORY:** A volume's main directory. Volume directories can hold only 51 files, but some of the files can be subdirectories, providing a useful loophole.

**VOLUME NAME:** A unique name assigned to each disk (or hard drive partition). Since ProDOS identifies disks by name (regardless of what drive they might be in) the computer can become confused if you have two disks with the same name online. ■

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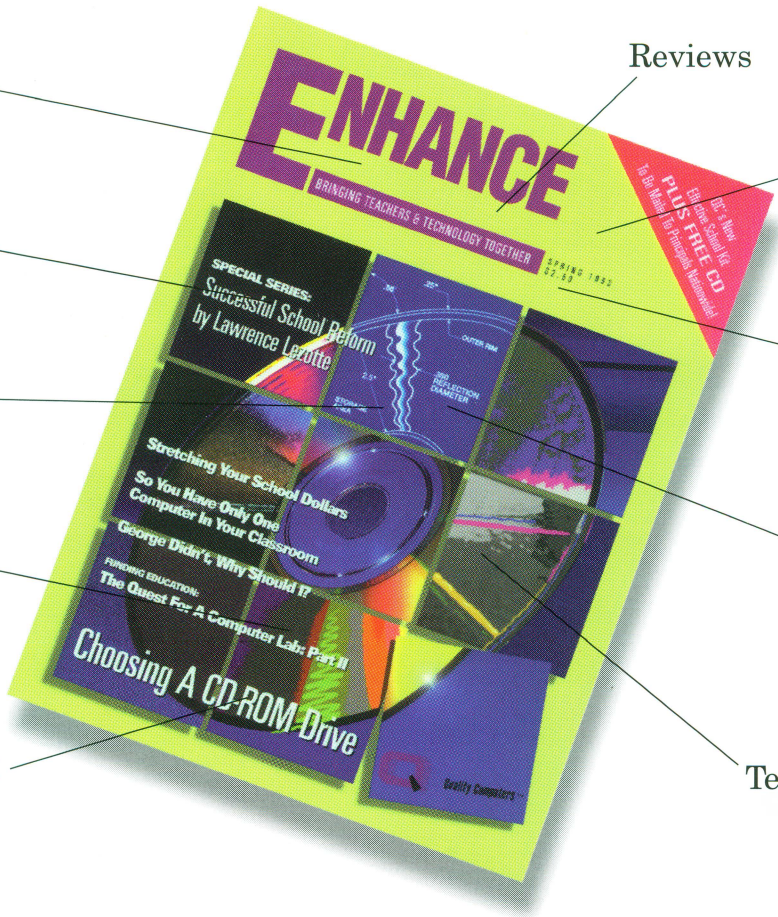
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3875 Telegraph Rd. Suite A202
Ventura, CA 93003
Contact: Tony Pizza (805) 482-3453
$12 per year

AppleJacks of Inland Empire
Contact: Larry (909) 864-2309
BBS: (909) 369-6637

Apple Sac
P.O. Box 254645
Sacramento, CA 95825
Contact: Heidi Bylsma (916) 486-8326
New $30, Renewal $25
BBS: Future Vision (Metal) 481-1096

Fresno Apple II Computer Users Group
P.O. Box 1682
Clovis, CA 93613

GravenStein Apple IIGS Users Group
P.O. Box 964
Petaluma, CA 94953-0964
$25 per year per family
BBS: (707) 585-0865

Newton's Fruit Users Group
14639 Cashew St.
Hesperia, CA 92345-2702
BBS: (619) 956-2631

Orange Apple Computer Club
25422 Trabuco Rd., Bldg 105, Ste-251
El Toro, CA 92630
(714) 770-1865
$25 per yr

Original Apple Corps
P.O. Box 90065
Los Angeles, CA 90009
Contact: Fred Duffy (310) 475-8400
BBS: (310) 454-4660

Peninsula Apple User Group
Redwood City, CA
Contact: Roger Lakner 367-8657

P.I.E. (Programming & Interfacing Enthusiasts, Inc.)
P.O. Box 2185
Santa Clara, CA 95055
BBS: (408) 733-46701

Tri-City Apple User Group
P.O. Box 93123
Pasadena, CA 91109
(213) 258-0281
$20 per year
BBS: (818) 288-5640

Tri Valley Apple II User Group (TVAIIUG)
P.O. Box 2096
Dublin, CA 94568
Contact: Jerry Carleton (510) 828-0959

Valley Apple Computer Club
12978 Crowley St.
Arleta, CA 91331
Contact: William Trent (818) 988-1752
$24
BBS: (818) 782-6471

## COLORADO

Computer C.A.C.H.E. (Colorado Apple & Compatable Home Enthusiasts)
P.O. Box 37313
Denver, CO 80237-7313
$18 per year
BBS: (303) 745-4960

Denver Apple Pi
P.O. Box 280668
Lakewood, CO 80228-0668
$18 plus $7 new member application fee
BBS: (303) 421-8605

## CONNECTICUT

Applelist Computer Club
P.O. Box 6053
Hamden, CT 06517

Appleshare
P.O. Box 200
Greens Farms, CT 06436
Contact: Joan Hoffman (203) 259-8513
$20 per year family membership

Hartford User Group Exchange (H.U.G.E.)
P.O. Box 380027
East Hartford, CT 06138-0027
Contact: Edward Sposito (203) 635-0557
$24
BBS: Bit Bucket (203) 257-9588

## DELAWARE

Delaware Valley
Apple IIGS Computer Club
P.O. Box 5956
Wilmington, DE 19808-0956
Contact: Curt Wilson (215) 473-6199
$20

## FLORIDA

Apple Computer Enjoyment Society (A.C.E.S.)
P.O. Box 291557
Fort Lauderdale, FL 33329-1557
1-800-924-4709 & (305) 584-5923
$30 1st year; $25 renewal

Fort Lauderdale Chapter (A.C.E.S.)
see above
BBS: (305) 431-5189

South Broward Chapter (A.C.E.S.)
see above
BBS: (305) 431-5189

West Palm Beach Chapter (A.C.E.S.)
see above
BBS: (407) 483-8426

Apple Tree of Central Florida
2810 Nela Ave.
Orlando, FL 32809
$35 annually
BBS: 366-0156

Spring Hill Apple Computer Enthusiasts (SPACE)
11418 Long Hill Court
Spring Hill, FL 34609
$20
(904) 686-7069

SunCoast Apple Tree
P.O. Box 7488
Clearwater, FL 34618
$25 per year
BBS: (813) 347-5104

SWACKS Apple Computer Club
c/o L.E. McLaughlin
384 Lancaster Ave.
Port Charlotte, FL 33952
$20 per year; $12 for Newsletter only

## GEORGIA

Computer User Group (Any Type)
110 Peachtree Rd.
Rockmart, GA 30153
Contact: Donald Sullivan
(404) 684-5909
$15 per year

## HAWAII

Hawaii Macintosh & Apple Users' Society
P.O. Box 29554
Honolulu, HI 96820-1954
Contact: Eugene Villaluz (808) 735-3750
$24 per year

## ILLINOIS

Apple Tree Computer Club
P.O. Box 823
Homewood, IL 60430-0823
Contact: Mary Ann Trzyna
(815) 469-1961
$28 family, $14 auxiliary per year
BBS: (708) 597-6942

Aurora Area Apple Core
P.O. Box 2901
Aurora, IL 60507-2901
Contact: George Murphy (708) 357-0759
$20

Northern Illinois Computer Society
P.O. Box 547
Arlington Heights, IL 60006
New $30, Renewal $24,
includes entire family
BBS: (312) 351-4374

Northshore Apple Users Group
c/o Babette Simon
5331 Carol
Skokie, IL 60077
Contact: Babette Simon (708) 967-7483
Family $20 per year

## INDIANA

Apple Pickers
P.O. Box 20136
Indianapolis, IN 46220
Contact: Steve McGuirk 257-3366
New $25, $30 per family per yr;
Renewal $20
BBS: 897-1989

Apple Users Group of Michiana
P.O. Box 11398
South Bend, IN 46634-1398
$15 per year

Fort Wayne
Apple Computer Users' Group
P.O. Box 10004
Ft. Wayne, IN 46850-0004
$15 per yr

Northwest Indiana Apple Users Group
7526 Independence St.
Merrillville, IN 46410
Contact: Nate Gaglilardi 762-6818
$14 per yr

## IOWA

Applebyter Computer Club
P.O. Box 2092
Davenport, IA 52809
Contact: Shawn Beattie
BBS: 788-0314

Metro Apple Computer Hobbyists
P.O. Box 176
Crescent, IA 51526-0176
$20/yr

Roland Story Apple User's Group
P.O. Box 407
Roland, IA 50236-0407
Contact: Dave Graham (515) 388-4700
$10 per year

## KANSAS

Apple Bits Users Group (ABUG)
P.O. Box 368
Shawnee Mission, KS 66201
Contact: Sandy Brockman
(816) 523-1007
$30 first year; $25 renewal

Apple Tree User Group, Inc.
306 West 5th Street
Larned, KS 67550
Contact: Shane Blanchett
$15 Initiation Fee; $20 Individual,
$25 Family

Parsons Apple Users Group
P.O. Box 1081
Parsons, KS 67357

Plane Apple User's Group
P.O. Box 47396
Wichita, KS 67201
Contact: Jay Herder (316) 733-2574
$24 per yr
OMEGA PRO (316) 721-7735

Topeka Area Apple Group
5419 SW 28th St.
Topeka, KS 66614-1713
Contact: Ron Hurd (913) 272-5033
$15 family

## KENTUCKY

Louisville Computer Society
P.O. Box 9021
Louisville, KY 40209-9021
$26

## MAINE

Northwoods IIGS User Group
P.O. Box 550
Milford, ME 04461-0550
$15 per year

## MARYLAND

Maryland Apple Corp.
Contact: Dave Smythe (410) 882-9234

Washington Apple Pi, Ltd.
7910 Woodmont Ave., Suite 910
Bethesda, MD 20814
(301) 654-8060

## MASSACHUSETTS

Cape Cod Apple Users Group
P.O. Box 48
South Dennis, MA 02660
Contact: Ron Church (508) 540-2517
$20 per yr

## MICHIGAN

Apple P.I.E.
P.O. Box 5055
Warren, MI 48090-5055
$25/yr

Apples for the Teachers
161 Cass Ave.
Mt. Clemens, MI 48043
Contact: Jim Wenzloff (313) 469-7206

groups specializing in a certain subject, or how to start a new group, call Apple Computer 1-800-538-9696, ext. 500. or write to: The Apple User Group Connection • Apple Computer, Inc. • 20525 Mariani Ave., M/S 36AA • Cupertino, CA 95014

Flint Apple Club
P.O. Box 460
Flint MI 48501
$20 per year
BBS: (313) 230-7754

Grand Rapids Apple II Users Group
P.O. Box 1811
Grand Rapids, MI 49501

Lansing Users Group
P.O. Box 27144
Lansing, MI 48909-7144
$18

Michigan Apple Computer User Group
P.O. Box 567
Warren, MI 48090-0567
$25 to start, $20 renewal per year

Midland Apple Club
1710 West St. Andrews
Midland, MI 48640

## MINNESOTA

Lake Superior Apple Users Group
Duluth, MN
Contact: Don Jacobson (218) 723-4349

Minnesota Apple Computer Users Group
P.O. Box 796
Hopkins, MN 55343
Contact: Rand Sibet (612) 566-8571
$25 per year, $15 student

## MISSOURI

American Public Domain Club
5821 Kerth Rd.
St. Louis, MO 63128
Contact: Michael Young
$12

Apple Squires of the Ozarks
P.O. Box 3986
Ozark, MO 65808-3986
Contact: Doug Kahler 833-4362
$15 initiation fee; $20 individual, $25 family

Monsanto Apple Users Group
2 Pem Road
St. Louis, MO 63146-5407
Contact: John B. Wilson (314) 694-2447 (Leave voice mail)
GEnie E-Mail Address: JBWILSON
$10/yr–Monthly Newsletter

## MONTANA

Billings Apple Users Group
P.O. Box 23005
Billings, MT 59104-3005
Students $15, Individual $20, Family $25, Corp $50
BBS: 256-3454

## NEBRASKA

Apple-Link
5509 South 31st, #8
Lincoln, NE 68516
$10 per year

## NEVADA

Southern Nevada Apple Family User Group
P.O. Box 12715
Las Vegas, NV 89112-1715
Contact: George Lewis (702) 364-9093
BBS: Apples Only (702) 646-7007

## NEW JERSEY

Bergen Apple Special Interest Club (B.A.S.I.C.)
The BASIC FACTS; 26-31A Warren Rd.
Fair Lawn, NJ 07410
Contact: Nancy Alexander 652-5632
$15 per year
SSA-BBS: 472-8312

North Jersey Mac Apple User Group
P.O. Box 215 (WOB)
West Orange, NJ 07052-0215
Contact: Pete Crosta (201) 667-6369
$25 per year

Ocean County Apple Users Group
25 Long Road
Freehold, NJ 07728
Contact: Matt Weiss (908) 431-2339
$15 per year

Ocean/Monmouth Apple Users Group
55 Meadowbrook Road
Brick, NJ 08723-7848
Contact: Bill Scratchley (908) 920-3833
$15 per year

Princeton Apple II Users Group
100 Sixth Ave.
Trenton, NJ 08619-3223
$12/yr

South Jersey Apple User's Group
P.O. Box 4273
Cherry Hill, NJ 08003-4273
Contact: Jack Bullion 767-4913
$20 single/family, $10 student
SJAUG APPLELINE 424-1382

## NEW MEXICO

Applequerque Computer Club
P.O. Box 35508
Albuquerque, NM 87176-5508

## NEW YORK

CRAB-Apple
(County of Rockland Apple Branch)
P.O. Box 268
W. Nyack, NY 10994-0268
$10 per year, free 1/2 yr membership for new members

GAB'er (Guilderland Apple Byters)
Roger C. Mazula, Editor
28 Hay Path
Watervliet, NY 12189
Contact: Karen Andersen 371-3115
$10 per year, $5 initiation fee
BBS: Plain Vanilla (518) 462-5953

Mixed Burnt Hills Apple Group
171 Birch Lane
Scotia, NY 12302
$8 per year
BBS: Plain Vanilla 462-5953

Putnam Valley
Educators Apple Users Group
142 Peekskill Hollow Rd.
Putnam Valley, NY 10579
Contact: Frank Reale (914) 528-8101

## NORTH CAROLINA

Carolina Apple Core
P.O. Box 31424
Raleigh, NC 27622
$18/yr
CAC 783-9010; NIEHS 541-0041

Charlotte Apple Computer Club
P.O. Box 221913
Charlotte, NC 28222
BBS: 563-6233

Eamon Adventurer's Guild
7625 Hawkhaven Dr.
Clemmons, NC 27012
Contact: Tom Zuchowski (919) 766-7490
$7 per year
T.ZUCHOWSKI on GEnie

Triad Apple Core
c/o GTCC Small Business ASST. Center
2007 Yancyville St., Suite 220
Greensboro, NC 27405

## OHIO

Apple-Dayton, Inc.
P.O. Box 3240
Dayton, OH 45401-3240
$25/year

Apple GS Columbus
P.O. Box 27072
Columbus, OH 43227-0072
Contact: John Ledford (614) 855-0937
BBS: (614) 475-9791

COACH
(Central Ohio Apple Computer Hobbyists)
P.O. Box 09028
Bexley, OH 43209
Contact: Mike Goodrich (614) 866-4860
BBS: (614) 262-4946

NEO Apple Corps
c/o Nancy Abbott
1935 Mattingly Rd.
Hinckley, OH 44233

## OREGON

Appleeugene
907 River Road #289
Eugene, OR 97404
Contact: Larry Badten 895-2605
$15 per yr

Portland Apple II User Group
P.O. Box 1608
Beaverton, OR 97075-1608
$20 1st Yr; $15 thereafter

Willamette Apple Connection
P.O. Box 7252
Salem, OR 97303-0053
$15 per yr
WAC BBS (503) 363-0861

## PENNSYLVANIA

Apple Butler Users Group
P.O. Box 39 Meridian Station
Butler, PA 16001-0039
$20 Single, $25 family

Columbia Apple Pi
c/o L.A. Winski, M.D.
P.O. Box 710
Millville, PA 17846
$6 per yr

Delaware Valley Apple Branch
132 Eaton Dr.
Wayne, PA 19087
Contact: Sam Lieberman

Erie Apple Crunchers, Inc.
P.O. Box 1575
Erie, PA 16507
$5 Initiation fee; $25 per yr
E.A.C. Express (814) 838-8510

Hershey Apple Core
P.O. Box 634
Hershey, PA 17033
HAC Hotline: (717) 531-1300
The Library BBS: (717) 566-1699

Keystone Apple Core
c/o William C. Miller, President
1789 Braggtown Road
East Berlin, PA 17316
$10 annually

## RHODE ISLAND

Rhode Island Apple Group
P.O. Box 4726
Rumford, RI 02916-4726
$10 initiation; $20 annual dues

## TENNESSEE

AppleCore of Memphis
P.O. Box 241002
Memphis, TN 38124-1002
$20 per year

Music City Apple Core
c/o Gerald Dooley
1085 Woodcock Hollow Road
Kingston Springs, TN 37082
Contact: Gerald Dooley 952-2367; George Emge 833-1508;
Everett Hertenstein 262-4778

## TEXAS

Apple Valley Computer Club
Tony Rodriguez, Pres. 5900 N. 28th Lane
McAllen, TX 78504
Contact: Tony Rodriguez 682-9625
$10/yr

Coastal Bend Users Group (CBUG)
P.O. Box 8391
Corpus Christi, TX 78468-8391
$12 per year per household
STIX (512) 992-4855

San Antonio Appleseed
P.O. Box 290028
San Antonio, TX 78280-1428
New Membership $15, Renewal $10

Tarrant Apple Group (TAG)
912 West Broadway Ave.
Fort Worth, TX 76104
Contact: Bob Baggott (817) 332-3341
$15 per year

## VIRGINIA

Northern Virginia Apple Users Group
P.O. Box 8211
Falls Church, VA 22041
PRO-NOVA BBS: (703) 671-0416

TideWater AppleWorms
P.O. Box 68097
Virginia Beach, VA 23455
Contact: Kevin Mitchell (804) 468-9914

## WEST VIRGINIA

Apple Users Group of Charleston
2105 Weberwood Drive
South Charleston, WV 25303
Contact: John Howell 343-6422, or Chas. Szasz 965-6965
$10 per yr

Club Apple User Group
125 North Pinch Rd.
Elkview, WV 25071
$10

## WISCONSIN

Milwaukee Apple Users Symposium
9818 W. Sheridan Ave.
Milwaukee, WI 53225
Contact: Helmut Wittbecker

Racine Area Users Group
P.O. Box 085152
Racine, WI 53408
$10/Family/yr.

Wisconsin Apple Users Club, Inc.
P.O. Box 20998
Milwaukee, WI 53220-0998
Contact: Bruce Kosbab (414) 771-6086

## AUSTRALIA

Apple Users Society of Melbourne (A.U.S.O.M.) Inc.
P.O. Box 1071 Narre Warren MDA
Narre Warren, VIC 3805
Ph: (613) 796-7553 Fax: (613) 796-7571

## CANADA

Kelowna Apple Users Group
1622 West Kelowna Rd.
Kelowna, B.C., Canada V1Z3B7
Contact: Robert Ashton
(604) 769-3140 6 to 9 pm
$2 per month

Winnipeg Apple Users' Group
P.O. Box 1798
Winnipeg, MB R3C 3R1
Contact: Don Soutter 256-0095
$20 indiv, $25 family;
$5 initiation fee
Applebox BBS: 224-0683

## ENGLAND

Cambridge Apple User Group
22 High Street
Cambridge CB4 1NG
England (U.K.)
Contact: Ian Archibald

The British IIgs Club
41 High Street
Great Shelford
Cambridge CB2 5EH
England (U.K.)
Contact: Peter Stark
(Produces bimonthly "members' disks)

## GERMANY

Kaiserslautern Apple Users Group
PSC 1 Box 8851
APO AE 09012

Ramstein Apple Club
PSC 2 Box 18
APO AE 09012

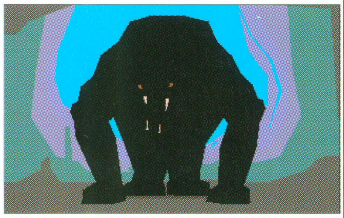
Rhein-Neckar Apple Users Group (RNAUG)
P.O. Box 525,
APO New York, NY 09063
Contact: James Clark
$10/yr

## ITALY

Apple II Survivor Club Italy
Vis Dal Fabbro 4
37122 Verona Italy
Contact: Manuel Turtula

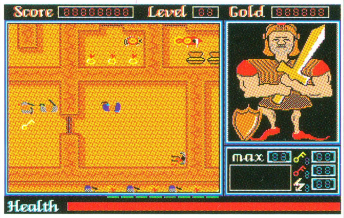
# Exclusive Source for the Best IIGS Programs

## Out of This World™



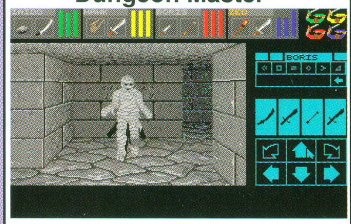
**Out of this World™:** HIGHEST RATED GAME EVER by Computer Game Review! Using the new technology of polygonal graphics, *Out of this World* is a masterpiece in action/adventure games. Hurtled through space and time by a nuclear experiment gone wrong you must blend logic and skill to survive the alien land. **Order product number IP60 for only $49.95.**

## Gate™



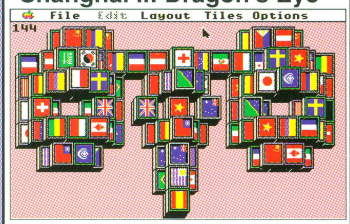

**The Gate™:** Fight your way through a castle riddled with mazes to save a bewitched kingdom. Battle against ghosts, magicians, snakes and other evil monsters. You'll need to use your head to solve the puzzles and your agility to conquer the action. Nintendo type action for the IIGS. It earned InCider's Editors' Choice award. **Order product number SV71 for only $30.**

## Dungeon Master™



**Dungeon Master™:** Step into the world of Dungeon Master and see fantasy come to life. This game puts you inside the most detailed dungeon ever created. You see a 3-D view of the dungeon. Monsters appear in the distance and are hard to see until they approach the light provided by your torch. There are lots of riddles to solve and monsters to defeat. **Product number FT50 for $25.**

## Shanghai II: Dragon's Eye™




**Shanghai II: Dragon's Eye™:** Shanghai II gives you 8 beautifully detailed tile sets, over a dozen different layouts, animated tilesets and over 100 sound effects. Several ways to play - Solitaire, Challenge & Tournament. Beyond all this there is the interactive version of the Dragon's Eye, a special challenge for superior Shanghai players. **Order product number BR92 for $49.95.**

## Mazer II™




**Mazer II:** Virtual reality on your IIGS. Cross a fantasy adventure with a flight simulator, then add a great deal more of something unexpected, and you have Mazer II. Enter a world of continuous movement with real-time point-of-view graphics for arcade action plus adventure. Requires 1.25 Megs and System 5.0 or higher. **Order FF50 for $25**

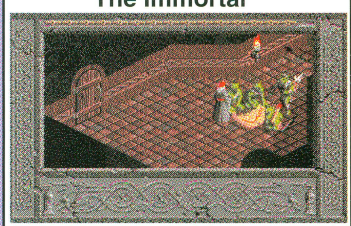
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| Captain Blood | $20 |
| Deja Vu I | $15 |
| Shadowgate | $15 |
| *Electronic Arts* | |
| Bard's Tale I | $20 |
| Bard's Tale II | $20 |
| Cartooners | $15 |
| Instant Music | $15 |
| Instant Synthesizer | $20 |
| Deluxe Paint II | $15 |
| Keef the Thief | $20 |
| The Immortal | $30 |
| Zany Golf | $25 |
| *Interplay* | |
| Neuromancer | $15 |
| Dragon Wars | $30 |
| Batttle Chess | $25 |
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| Gold Rush | $25 |
| Manhunter – New York | $20 |
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| The Third Courier | $25 |
| Fastbreak | $15 |
| *FTA* | |
| Photonix II | $20 |

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| Xenocide | $23 |
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| Basic Paint | $45 |
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| Hacker II | $20 |
| The Last Ninja | $20 |
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| Music Studio 2.0 | $39 |
| Shanghai | $20 |
| *Michtron* | |
| Airball | $20 |
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| Tunnels of Armageddon | $20 |
| Club Backgammon | $10 |
| Triango | $10 |
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| Dungeon Master | $25 |
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| Crystal Quest | $20 |
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| Express | $30 |
| SuperConvert | $26 |
| GraphicWriter III | $85 |
| Gate | $30 |
| Space Fox | $30 |
| The Manager | $46 |
| Kangaroo | $30 |
| Transprog III | $30 |

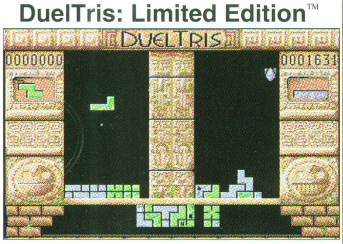
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| *Econ Technologies* | |
| Auto Ark | $28 |
| *DreamWorld Software* | |
| DreamGrafix | $59 |
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| Pointless | $42 |
| InWords | $78 |
| *Lawrence Productions* | |
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| *Spectrum Holobyte* | |
| Tetris | $26 |
| Solitaire Royale | $24 |
| *Apple, Inc* | |
| HyperCard GS | $69 |
| System 6.0.1 & Manuals | $39 |
| *Claris* | |
| AppleWorks GS | $200 |
| *G. Bredon* | |
| ProSel 16 | $69 |
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| Print Shop Companion | $34 |
| Where in the World is CS | $31 |
| Where in the USA is CS | $31 |
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| Oregon Trail | $21 |
| *New Concepts* | |
| Prism | $39 |
| *UbiSoft* | |
| Pick 'N Pile | $25 |
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| Switch-It | $46 |
| Q: Buff | $38 |
| *Software Solutions* | |
| Your Money Matters | $79 |
| *Kraft* | |
| Apple IIGS Joystick | $25 |

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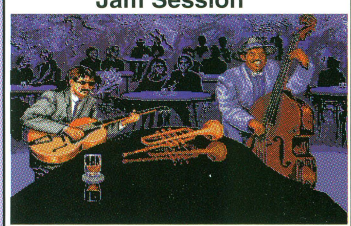
**The Immortal™:** The best adventure game ever written for the IIGS. Venture into the dungeon and unravel the mysteries of the levels below. Fight against animated trolls and goblins. See the blood spray off the edge of your sword and hear the last groan of your enemy. Can you get past the whirlpool? **Product number EA82 is only $30.**

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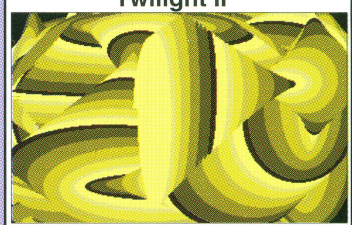
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**Twilight II™:** A revolutionary new screen saver control panel that takes complete advantage of your IIGS. There are over 30 effect modules including 3-D wireframe animation, plasma cloud generation, fireworks, a bouncing clock, rain, snow, Moire, and kaleidoscope. This program requires 2 Megs and System 6.0. A hard drive is recommended. **Order number TW50. The price is $29.**

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**Space Fox™:** Pilot your spacecraft through multiple levels while you're constantly under attack. Use your arsenal of weapons and your wits to destroy the attacking ships. Use your skills to strategically dock with your home base. Be a Space Fox and master the levels of the galaxy. This game is rated a WOW!! **Order product number SV70 for only $30.**

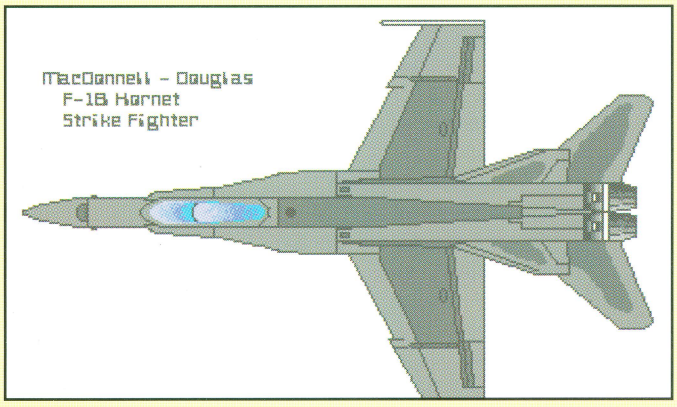
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# ART Gallery

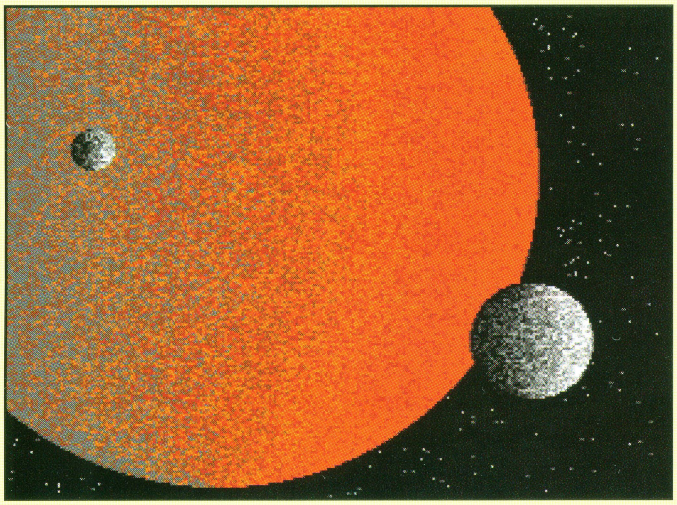
*This issue we feature Artist Richard Knighton. Richard created these images using an Apple IIgs and a variety of paint programs.*



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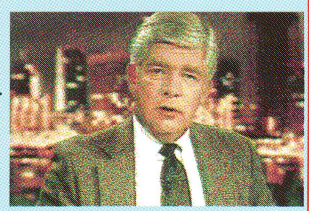
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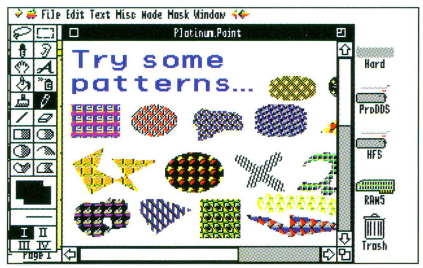
## The only true MultiFinder® for your Apple IIGS®

IIGS users can now benefit from the same technology that Macintosh users enjoy—*The Manager* is the first and only true MultiFinder for your Apple IIGS! Multiple applications can be open simultaneously and moving among them is as simple as clicking in a different window. This is a tremendous time saver because you don't have to quit one application to start using another, which is especially convenient when copying and pasting between applications.

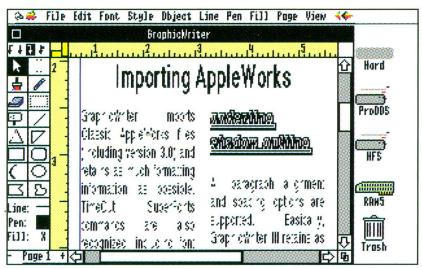
Use *The Manager* to create your own integrated environment...just open your favorite IIGS-specific word processing, painting, DTP, telecom and other programs, then instantly move among them! It is fully compatible with AppleWorks GS, GraphicWriter III, Platinum Paint, Teach, and more. It even works with system extensions such as Express, Kangaroo, TransProg III, and others.

**Don't settle for a limited "switcher"—the Macintosh started with this type of program but MultiFinder made it obsolete.**

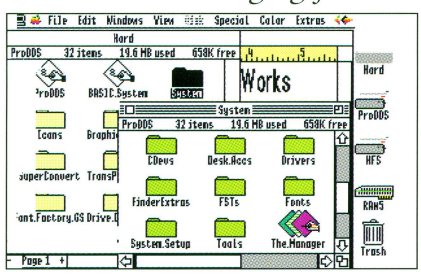
*Click! You're painting...*




*Click! You're laying out pages...*




*Click! You're arranging files...*




Macintosh users know from experience that a MultiFinder program gives you greater control, makes you more productive, and is more enjoyable because it's easier to use. The only true MultiFinder for the IIGS is *The Manager*...it even supports multi-tasking for compatible applications without requiring additional software.

*The Manager* is the result of a two year collaboration between Seven Hills Software (Express, GraphicWriter III, SuperConvert, others) and BrainStorm Software (Kangaroo, TransProg III, others). It requires System 6 and as little as 2MB memory (4MB recommended for greatest efficiency; required for some program combinations). A hard drive is not required but is recommended because you'll want a fast response from your disk drive when you instantly select programs on the screen.

*The Manager* is the perfect way to increase your productivity!

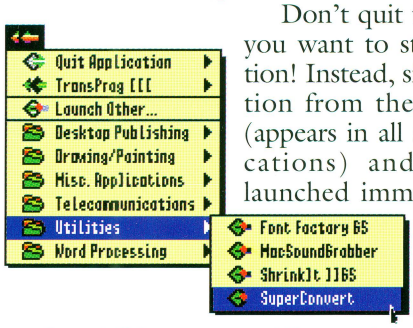
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***QC's price only $49.95!***

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### TransProg III™

System 5.0.4 and System 6




Don't quit to the Finder each time you want to start a different application! Instead, simply select the application from the TransProg III menu (appears in all standard desktop applications) and the application is launched immediately. If you're not using The Manager, the currently-running application is automatically quit first.

In addition to providing quick launching, options can be set for each application, including slot changes without having to restart the computer! The TransProg III menu is fully customizable, from the color and arrangement of the menu items to the creation of sub-menus in which you can group similar applications together.

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### Express™

System 5.0.4 and System 6




Stop waiting for your printer—use Express to quickly print your documents to disk, then continue working as your printer prints in the background. The longer or more complex the document, the more time you save!

Multiple files can be spooled, printed more than once, and deleted from the spool list. You can even switch between programs while the printer is working.

Express works with all standard IIGS desktop software (e.g. AppleWorks GS, GraphicWriter III). It requires an Apple IIGS, hard disk drive, and any direct-connect (non-networked) printer except the StyleWriter.

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# Q-MODEMS

## Fast, affordable, and designed to save schools money!

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With a Q-Modem, you can access bulletin boards and computers close to home, across the country, and around the world. You'll find airline schedules, business news, free software, gardening tips, technical help, plus everything in-between! Name any topic—you can find it on-line.

### IT'S COMPATIBLE!

The Q-Modem is Hayes compatible and works with virtually any computer. It is compatible with industry-standard, intelligent "AT" commands and all commonly used protocols (including Bell 103/212A, CCIT v.22, and CITT v.22bis). Since the Q-Modem operates asynchronously at 300, 600, 1200, and 2400 baud, you can communicate at whatever rate you need to. All these features let you use the Q-Modem to connect with most modems being used today.



### IT'S EASY TO USE!

The Q-Modem is very easy to use. It features autoanswer and autodial (tone or pulse) for performing phone tasks, and it has a programmable-volume speaker for monitoring call progress. Storing phone numbers and user configurations is also simple because of the modem's programmable nonvolatile memory.

**You also get:**

- Compatibility with U.S. and international protocols.
- Nonvolatile memory to store your configurations and frequently called numbers
- Auto-Answer AutoDial (tone or pulse)
- Two phone jacks for telephone line and phone
- Adjustable-volume speaker
- Introductory packages for on-line services
- One year warranty

All you'll need to use a Q-Modem is your computer, software, and a cable to connect the modem to your computer.



### MODEM BUNDLES

**Q-Modem, MicroPhone LT, and cable**
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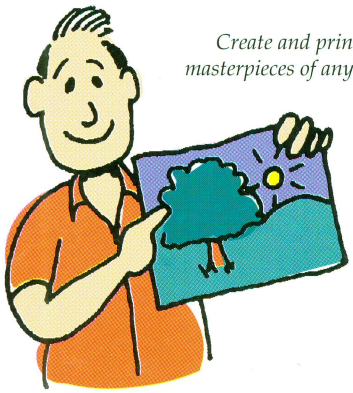
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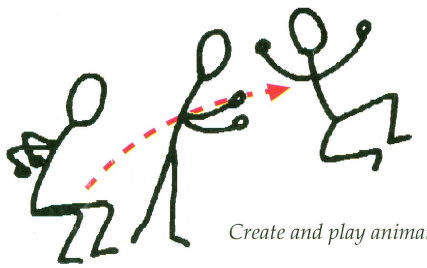
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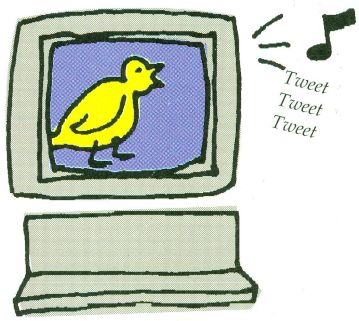

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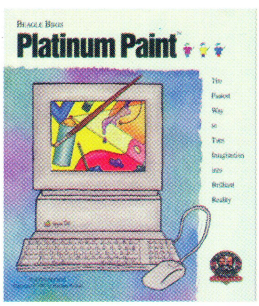

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